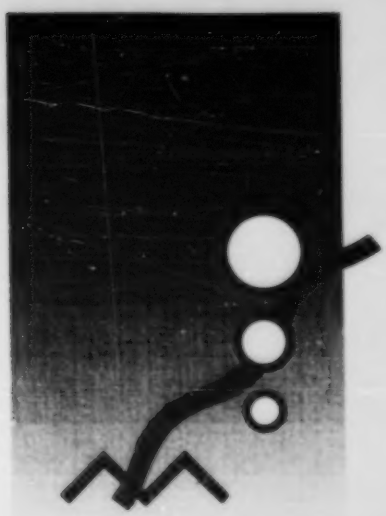

Guide for Reporting to the National Pollutant Release Inventory

2000

Canadian Environmental Protection Act

Environment Canada Environnement Canada

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2000

Canadian Environmental Protection Act

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Disclaimer

Should any inconsistencies be found between this *Guide* and the official *Canada Gazette* notice and its amendment, the notice published on December 25, 1999, and the amendment published on December 23, 2000, in the *Canada Gazette* Part I will prevail.

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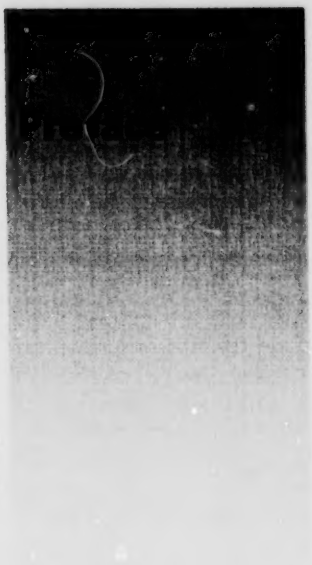


The National Pollutant Release Inventory (NPRI) is at the centre of the Government of Canada's efforts to track toxic substances. It is the only nation-wide, publicly-accessible program of its type in Canada that provides information on pollutants being released to the environment and transferred for disposal. Since its inception in 1992, the role of the NPRI has expanded to include the collection of information on NPRI substances being recycled and pollution-prevention activities.

For the 2000 reporting year, there are 268 substances listed in the NPRI, 55 of which have been declared toxic under the *Canadian Environmental Protection Act*. Twenty substances have reporting thresholds and reporting criteria which differ from the original NPRI reporting criteria (10-tonne, manufacture, process and other use reporting threshold with 1% concentration exemption, except for by-products). Substances with alternate reporting thresholds are mercury (and its compounds), 17 individual polycyclic aromatic hydrocarbons (PAHs), polychlorinated dibenzo-*p*-dioxins (dioxins) / polychlorinated dibenzofurans (furans), and hexachlorobenzene (HCB).

This *Guide*, together with its companion document, *Supplementary Guide for Reporting to the National Pollutant Release Inventory – Alternate Thresholds – 2000*, enables facility owners or operators to review the NPRI reporting criteria and determine if they are required to report to the NPRI for the 2000 reporting year. It also provides guidance for completing the reporting form and submitting a report to Environment Canada.

Cette publication est aussi disponible en français sous le titre de « Guide de déclaration à l'Inventaire national des rejets de polluants – 2000 ».

Highlights and Important Changes for 2000

Report Due Dates

Reporting deadlines for the NPRI are subject to change and should be verified each year.

Canada Gazette Notice	Reporting Year	Due Date
December 25, 1999	2000 calendar year	**June 1, 2001**

Correspondence

Correspondence from the NPRI will be addressed to the company coordinator. If there is no coordinator, correspondence will be sent to the technical contact. Failure to provide correct telephone and facsimile numbers for the contacts could delay receipt of important notices from NPRI offices. See Section 3 – A4.0, A6.0 and A8.0.

New Substances and Alternate Reporting Thresholds

Many substances pose serious risks to human health or the environment in relatively low quantities. Very limited, if any, data for these substances would be reported to the NPRI at the original 10-tonne and 1% concentration reporting thresholds. In 1999, Environment Canada and the NPRI Multistakeholder Ad Hoc Work Group on Substances examined candidate substances for addition to the NPRI and at alternate reporting thresholds. The following changes were made to the NPRI for the year 2000.

- Four substances were added to the NPRI with the original 10-tonne and 1% concentration reporting thresholds – acrolein; 4-*tert*-octylphenol; oxirane, methyl-, polymer with oxirane, mono(nonylphenyl)ether; and polymeric diphenylmethane diisocyanate, commonly referred to as PMDI.
- The reporting threshold for mercury (and its compounds) was reduced from 10 tonnes to 5 kg and the 1% concentration threshold was removed.
- Seventeen polycyclic aromatic hydrocarbons (PAHs) were added at an alternate reporting threshold.
- Polychlorinated dibenzo-*p*-dioxins (dioxins) and polychlorinated dibenzofurans (furans) were added as a single substance group with alternate reporting criteria.
- Hexachlorobenzene (HCB) was added with alternate reporting criteria.
- The 20 000-hour employee threshold was removed for facilities used for wood preservation and certain types of incineration.

The consultations leading to these changes and the reporting criteria for the substances with alternate reporting thresholds are described in detail in the *Supplementary Guide* (see below) and on the NPRI Web site.

Supplementary Guide

The reporting criteria for substances with alternate reporting thresholds are explained fully in a companion document, *Supplementary Guide for Reporting to the National Pollutant Release Inventory – Alternate Thresholds – 2000*. Substances with alternate reporting thresholds include:

- mercury (and its compounds)
- 17 polycyclic aromatic hydrocarbons (PAHs), and
- dioxins/furans and hexachlorobenzene (HCB).

Both this *Guide* and the *Supplementary Guide* should be consulted by owners and operators of facilities to determine if they must report for any NPRI substances.

The *Supplementary Guide* contains:

- detailed explanations of the activities to which the 20 000-hour employee threshold does not apply
- detailed explanations of the reporting criteria for the alternate-threshold substances
- definitions of the activities for which facilities must report releases and transfers of alternate-threshold substances (including biomedical waste and hazardous waste)
- for facilities engaged in wood preservation, the reporting criteria for alternate-threshold substances
- examples of how to estimate releases of alternate-threshold substances and various reporting scenarios
- the history and intent of the NPRI consultative process
- potential sources of PAHs and mercury (and its compounds), as well as substances, products and materials known to contain mercury, and
- an overview of the NPRI emission factor database that was compiled to assist facilities to estimate their releases of alternate-threshold substances.

Mercury (and its compounds)

Starting in the 2000 reporting year, a facility is required to submit a report for mercury (and its compounds) if they were manufactured, processed or otherwise used, at any concentration, in a quantity of 5 kg or more. Further information is provided in Chapter 3 of the *Supplementary Guide*.

Polycyclic Aromatic Hydrocarbons

Seventeen polycyclic aromatic hydrocarbons (PAHs) were added to the NPRI at an alternate threshold. The reporting criteria are based on quantities incidentally manufactured and released or transferred rather than quantities manufactured, processed or otherwise used, except in the case of wood preservation using creosote. Reporting of the 17 PAHs is required if:

- any individual PAH was incidentally manufactured and the quantity of all PAHs released on site or transferred off site as the result of incidental manufacture together totalled 50 kg or more, or
- PAHs were released on site or transferred off site from a wood preservation process using creosote.

Further information is provided in Chapter 4 of the *Supplementary Guide*.

Dioxins/Furans and Hexachlorobenzene

Polychlorinated dibenzo-*p*-dioxins (dioxins) and polychlorinated dibenzofurans (furans) are listed together in the NPRI and are referred to as dioxins/furans. Hexachlorobenzene (HCB) was also added to the NPRI for 2000. Facilities engaged in certain activities are required to report dioxins/furans and HCB to the NPRI. There are

no quantitative, substance-based reporting thresholds. Information to be reported for dioxins/furans and HCB differs from that required in other NPRI substance reports. Further information is provided in Chapter 5 of the *Supplementary Guide*.

Employee Criteria

In previous years, a facility was exempt from reporting to the NPRI if, during the reporting year, the total number of hours worked by all its employees was less than 20 000 hours (equivalent to 10 full-time employees). Starting with the 2000 reporting year, Environment Canada removed the 20 000-hour employee threshold for facilities used for certain types of incineration and for wood preservation (see Section 2). This change was made because, although facilities used for these activities are known to release significant quantities of NPRI pollutants to the environment, they may not have been required to report to the NPRI since they did not meet the employee threshold.

Common Errors

- **Statement of Certification**
  A number of facilities neglect to provide a signed Statement of Certification. This renders the report incomplete.

- **NPRI Identification Number**
  A number of facilities do not report the NPRI identification number assigned to the facility. Your assigned NPRI ID number is provided in your NPRI correspondence. NPRI ID numbers are between 0001 and 9999. Contact your regional NPRI office if you cannot find your ID number.

- **Industrial Classification**
  Many facilities report industrial classification codes that are inconsistent with their industrial activities. Facilities must verify that the Canadian SIC, U.S. SIC and NAICS Canada codes that they report best describe their activities. The NPRI software provides pick-lists for these codes. While there may be several choices because of differences in the classification systems, be certain to choose the classification that best describes the facility. If you have any doubts about selecting industrial classification codes, please contact your regional NPRI office.

- **Software Problems**
  Some facilities do not install and test the NPRI reporting software early enough. Technical problems encountered in installing or running the software may result in submission of a late report. Facilities are urged to ensure that the software is correctly installed well in advance of the June 1 reporting deadline.

- **Administrative Problems**
  Some facilities have replaced staff who prepared the previous year's NPRI report and, as a result, these new staff are unaware of the requirement to report, do not receive the NPRI reporting kit when it arrives at the facility, or cannot find the electronic data and records used to prepare the previous year's report. As a result, the facility may submit a late or incomplete report, or expend excess effort in completing the report on time. All facilities are encouraged to establish and maintain appropriate administrative procedures to ensure an orderly transition during staff and other corporate changes.

Section 1 - Criteria for Reporting to the National Pollutant Release Inventory

Introduction

The NPRI changed significantly for the 2000 reporting year with the introduction of alternate reporting thresholds. Many substances pose serious risks to human health or the environment in relatively low quantities. Very limited data, if any, would be reported to the NPRI for these substances at the original 10-tonne and 1% concentration reporting thresholds. The new reporting criteria for substances with alternate reporting thresholds are explained fully in a companion document, *Supplementary Guide for Reporting to the National Pollutant Release Inventory – Alternate Thresholds – 2000*. Substances with alternate reporting thresholds include:

- mercury (and its compounds)
- 17 polycyclic aromatic hydrocarbons (PAHs), and
- dioxins/furans and hexachlorobenzene (HCB).

This *Guide* differs from the *Supplementary Guide* because it is intended for the majority of facilities reporting to the NPRI which meet the 10-tonne and 1% concentration thresholds for manufacturing, processing or otherwise using an NPRI substance. These reporting criteria are explained in Section 2. Section 3 explains what information is required and how to complete the reporting form.

This *Guide*, together with the *Supplementary Guide*, should be consulted by owners and operators of facilities to determine if they must report for any NPRI substances.

Understanding the *Canada Gazette* Notices

On December 25, 1999, a "Notice with Respect to Substances in the National Pollutant Release Inventory for 2000" was published under the authority of subsection 16(1) of the *Canadian Environmental Protection Act (CEPA)* 1988, in the *Canada Gazette*, Part I (*Canada Gazette*, December, 1999). This notice specified that any person who owned or operated a facility during the calendar year 2000, under the conditions prescribed in the notice, provides certain information to the Minister of the Environment by no later than **June 1, 2001**. An amendment to the *Canada Gazette* notice was published on December 23, 2000, to clarify some of the reporting requirements. Notices are published annually in the *Canada Gazette*, Part I. Changes may be made to the notice from year to year.

In this document, all references to the 2000 *Canada Gazette* notice refer collectively to the notice published on December 25, 1999, and its amendment published on December 23, 2000.

The 2000 *Canada Gazette* notice encompasses a wide range of substances, alternate thresholds and reporting criteria. It is divided into four schedules with several parts in each. Its contents are outlined below.

If you have any difficulties interpreting the requirements of the NPRI notice, please consult the Questions and Answers in Section 6 or contact your regional NPRI office listed inside the front cover of this guide. More information on the NPRI is available on Environment Canada's Web site at <**www.ec.gc.ca/pdb/npri**>.

The reporting criteria for substances with alternate reporting thresholds are explained fully in a companion document, Supplementary Guide for Reporting to the National Pollutant Release Inventory – Alternate Thresholds – 2000.

Schedule 1 – National Pollutant Release Inventory Substances
Schedule 1 lists all substances in the NPRI, and is broken into the following four parts according to the reporting criteria for the substances:

- Part 1 lists the 248 substances to which the original NPRI reporting criteria apply (10-tonne, manufacture, process and other use reporting threshold with 1% concentration exemption, except for by-products)
- Part 2 lists mercury (and its compounds)
- Part 3 lists 17 individual PAHs, and
- Part 4 lists dioxins/furans and HCB.

Schedule 2 – Criteria for Reporting

- General - reporting deadline, exclusions and exemptions
- Part 1 - reporting criteria for substances listed in Schedule 1, Part 1
- Part 2 - reporting criteria for mercury (and its compounds) listed in Schedule 1, Part 2
- Part 3 - reporting criteria for the 17 PAHs listed in Schedule 1, Part 3
- Part 4 - reporting criteria for dioxins/furans and HCB listed in Schedule 1, Part 4, and
- Part 5 - five activities to which the 20 000-hour employee threshold does not apply.

Schedule 3 – Types of Information Subject to Notice
Schedule 3 outlines the types of information that must be submitted by facilities which met the reporting criteria defined in Schedule 2, including the information that is reported to the NPRI for each substance. Some information in Schedule 3 is applicable only to alternate-threshold substances (i.e., sections 5-8).

Schedule 4 – Definitions
Schedule 4 provides definitions of several terms used in the notice.

General Reporting Criteria

The reporting criteria for all substances listed in the NPRI are summarized in the flowchart in Figure 1. What follows is a brief walk through the flowchart. The criteria for the substances listed in Schedule 1, Part 1, of the 2000 *Canada Gazette* notice (10-tonne manufacture, process or other use threshold) are explained in this *Guide* while the *Supplementary Guide* provides details on the reporting criteria of the alternate-threshold substances listed in Schedule 1, Parts 2, 3 and 4, of the 2000 *Canada Gazette* notice.

Exempt Facilities

Certain facilities are exempt from reporting to the NPRI. **These exemptions apply to every substance in the NPRI.** These exemptions also apply to any part of the facility that is used exclusively for one or more of the activities listed in the flowchart. Beginning with the 2000 reporting year, a new exemption was added for the practice of dentistry because of the reduction of the quantity threshold for mercury (and its compounds) from 10 tonnes to 5 kilograms and removal of the 1% concentration threshold.

Employee Criteria

In previous years, a facility was exempt from reporting if, during the reporting year, the total number of hours worked by all its employees was less than 20 000 hours (equivalent to 10 full-time employees). Beginning with the 2000 reporting year, this 20 000-hour employee threshold does not apply to facilities used for wood preservation and certain types of incineration (see Table 1, Section 2). This applies only to facilities that were used mainly or exclusively for one of these activities.

A facility is not required to report to the NPRI if, during the 2000 calendar year:

- the total number of hours worked by all employees was less than 20 000 hours, **and**
- the facility was not used for any of the activities listed in the flowchart, for which the 20 000-hour employee threshold does not apply .

This change was made because, although facilities used for these activities are known to release significant quantities of NPRI pollutants to the environment, they may not have been required to report to the NPRI since they did not meet the 20 000-hour employee threshold. Further information is provided in Chapter 2 of the *Supplementary Guide*.

Schedule 1, Part 1, Substances

This section of the flowchart refers to the 248 substances listed in Schedule 1, Part 1, of the 2000 *Canada Gazette* notice to which the original NPRI reporting requirements still apply. If a facility met the employee criteria described above, it must report on-site releases and off-site transfers of an NPRI Part 1 substance if:

- the facility manufactured, processed or otherwise used 10 tonnes (10 000 kg) or more of an NPRI Part 1 substance in the 2000 calendar year, **and**
- the NPRI Part 1 substance was manufactured, processed or otherwise used at a concentration greater than or equal to 1% by weight, with the exception of NPRI substances considered to be by-products. The total weight of by-products must also be included in the calculation of the 10-tonne threshold for each NPRI Part 1 substance.

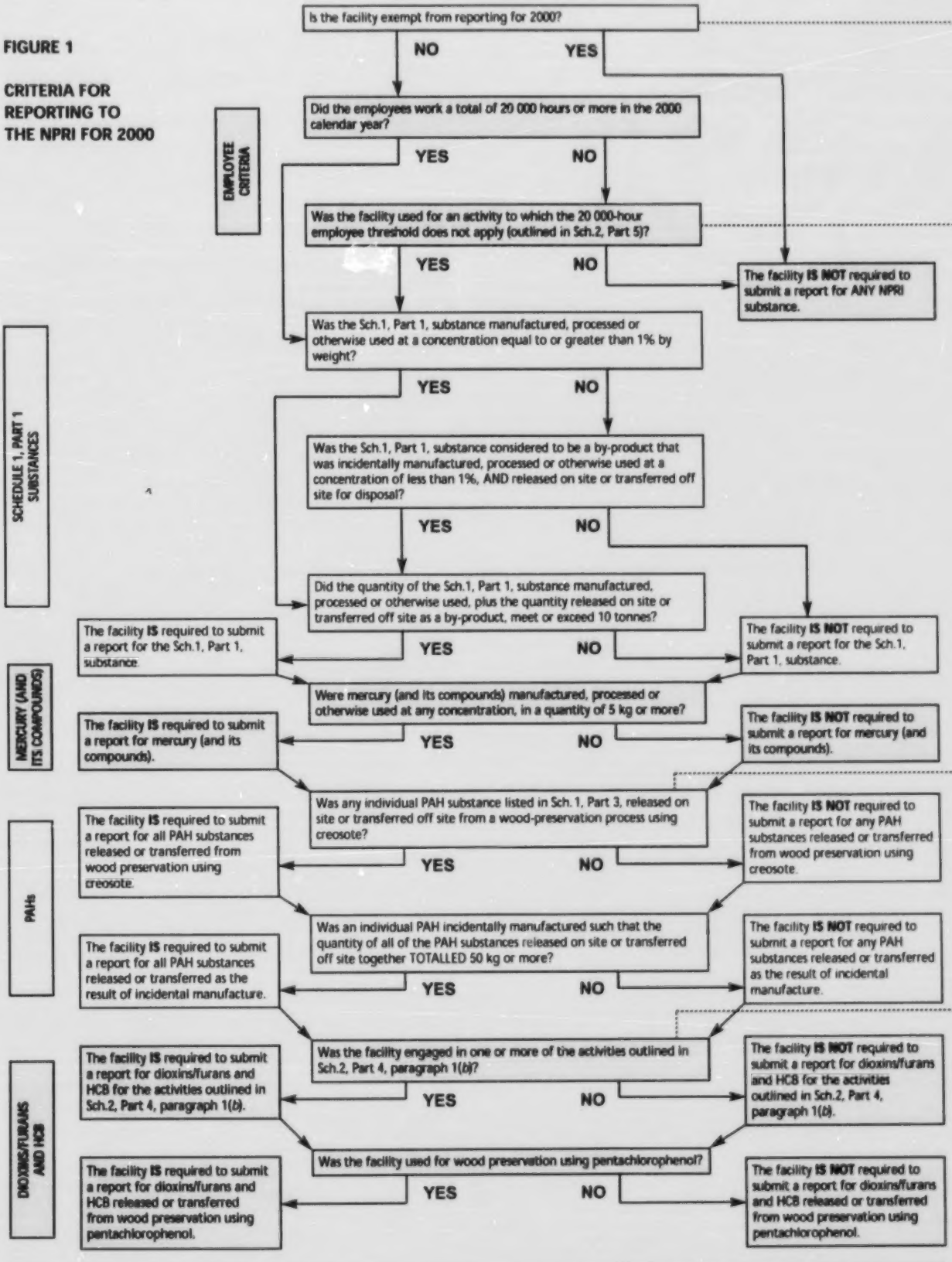
Further information is provided in Section 2 of this *Guide*.

Schedule 1, Part 2, Substances [Mercury (and its compounds)]

If a facility met the employee criteria described above, it is required to report releases and transfers for mercury (and its compounds) if they were manufactured, processed or otherwise used, at any concentration, in a quantity of 5 kg or more in the 2000 calendar year. Further information is provided in Chapter 3 of the *Supplementary Guide*.

FIGURE 1

CRITERIA FOR REPORTING TO THE NPRI FOR 2000


Is the facility exempt from reporting for 2000?
NO
YES
EMPLOYEE CRITERIA
Did the employees work a total of 20 000 hours or more in the 2000 calendar year?
YES
NO
Was the facility used for an activity to which the 20 000-hour employee threshold does not apply (outlined in Sch.2, Part 5)?
YES
NO
The facility IS NOT required to submit a report for ANY NPRI substance.
SCHEDULE 1, PART 1 SUBSTANCES
Was the Sch.1, Part 1, substance manufactured, processed or otherwise used at a concentration equal to or greater than 1% by weight?
YES
NO
Was the Sch.1, Part 1, substance considered to be a by-product that was incidentally manufactured, processed or otherwise used at a concentration of less than 1%, AND released on site or transferred off site for disposal?
YES
NO
Did the quantity of the Sch.1, Part 1, substance manufactured, processed or otherwise used, plus the quantity released on site or transferred off site as a by-product, meet or exceed 10 tonnes?
The facility IS required to submit a report for the Sch.1, Part 1, substance.
YES
NO
The facility IS NOT required to submit a report for the Sch.1, Part 1, substance.
MERCURY (AND ITS COMPOUNDS)
Were mercury (and its compounds) manufactured, processed or otherwise used at any concentration, in a quantity of 5 kg or more?
The facility IS required to submit a report for mercury (and its compounds).
YES
NO
The facility IS NOT required to submit a report for mercury (and its compounds).
PAHs
Was any individual PAH substance listed in Sch. 1, Part 3, released on site or transferred off site from a wood-preservation process using creosote?
The facility IS required to submit a report for all PAH substances released or transferred from wood preservation using creosote.
YES
NO
The facility IS NOT required to submit a report for any PAH substances released or transferred from wood preservation using creosote.
Was an individual PAH incidentally manufactured such that the quantity of all of the PAH substances released on site or transferred off site together TOTALLED 50 kg or more?
The facility IS required to submit a report for all PAH substances released or transferred as the result of incidental manufacture.
YES
NO
The facility IS NOT required to submit a report for any PAH substances released or transferred as the result of incidental manufacture.
DIOXINS/FURANS AND HCB
Was the facility engaged in one or more of the activities outlined in Sch.2, Part 4, paragraph 1(b)?
The facility IS required to submit a report for dioxins/furans and HCB for the activities outlined in Sch.2, Part 4, paragraph 1(b).
YES
NO
The facility IS NOT required to submit a report for dioxins/furans and HCB for the activities outlined in Sch.2, Part 4, paragraph 1(b).
Was the facility used for wood preservation using pentachlorophenol?
The facility IS required to submit a report for dioxins/furans and HCB released or transferred from wood preservation using pentachlorophenol.
YES
NO
The facility IS NOT required to submit a report for dioxins/furans and HCB released or transferred from wood preservation using pentachlorophenol.

A facility, or any part thereof, is exempt from reporting if it is used exclusively for one of the following activities (listed in Schedule 2, section 2, of the 2000 *Canada Gazette* notice):

- educating or training students, such as universities, colleges and schools
- research or testing
- the maintenance and repair of transportation vehicles, such as automobiles, trucks, locomotives, ships or aircraft
- the distribution, storage or retail sale of fuels
- the wholesale or retail sale of articles or products which contain NPRI substances, provided that the substances are not released to the environment during normal use at the facility
- the retail sale of NPRI substances
- growing, harvesting or managing renewable natural resources, such as fisheries, forestry or agriculture, **but not** those facilities that process or otherwise use their products
- mining, **but not** those facilities engaged in further processing of mined materials
- drilling or operating wells to obtain oil and gas products, **but not** those facilities engaged in further processing of these oil and gas products, or
- the practice of dentistry.

Was the facility used for any of the following activities to which the 20 000-hour employee threshold does not apply (listed in Schedule 2, Part 5, of the 2000 *Canada Gazette* notice)?:

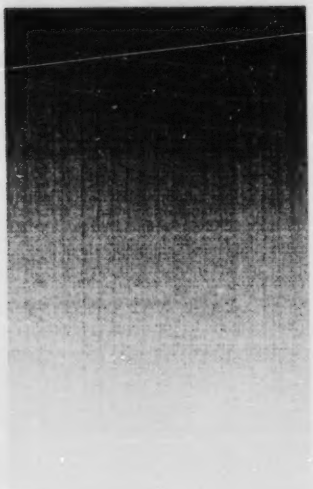
- non-hazardous solid waste incineration of 100 tonnes or more of waste per year, including small combustion units, teepee burners and beehive burners
- biomedical or hospital waste incineration of 100 tonnes or more of waste per year
- hazardous waste incineration
- sewage sludge incineration, or
- wood preservation.

Seventeen individual PAHs are listed in Schedule 1, Part 3, of the 2000 *Canada Gazette* notice:

- Benzo(a)anthracene (56-55-3)
- Benzo(a)phenanthrene (218-01-9)
- Benzo(a)pyrene (50-32-8)
- Benzo(b)fluoranthene (205-99-2)
- Benzo(e)pyrene (192-97-2)
- Benzo(g,h,i)perylene (191-24-2)
- Benzo(j)fluoranthene (205-82-3)
- Benzo(k)fluoranthene (207-08-9)
- Dibenz(a,j)acridine (224-42-0)
- Dibenzo(a,h)anthracene (53-70-3)
- Dibenzo(a,i)pyrene (189-55-9)
- 7H-Dibenzo(c,g)carbazole (194-59-2)
- Fluoranthene (206-44-0)
- Indeno(1,2,3-c,d)pyrene (193-39-5)
- Perylene (198-55-0)
- Phenanthrene (85-01-8)
- Pyrene (129-00-0)

Was the facility engaged in one or more of the following activities (listed in Schedule 2, Part 4, paragraph 1(*b*) of the 2000 *Canada Gazette* notice)?:

- non-hazardous solid waste incineration of 100 tonnes or more of waste per year, including small combustion units, teepee burners and beehive burners
- biomedical or hospital waste incineration of 100 tonnes or more of waste per year
- hazardous waste incineration
- sewage sludge incineration
- base metals smelting (copper, lead, nickel and zinc)
- smelting of secondary lead
- smelting of secondary aluminum
- manufacturing of iron using a sintering process
- operation of electric arc furnaces in steel manufacturing
- operation of electric arc furnaces in steel foundries
- production of magnesium
- manufacturing of portland cement
- production of chlorinated organic solvents or chlorinated monomers
- combustion of fossil fuel in a boiler unit, for the purpose of producing steam for the production of electricity, with a generating capacity of 25 megawatts or greater of electricity
- combustion of fuel in kraft liquor boilers used in the pulp and paper sector, or
- combustion of hog fuel originating from logs that were transported or stored in salt water in the pulp and paper sector.



Schedule 1, Part 3, Substances [Polycyclic Aromatic Hydrocarbons (PAHs)]

Seventeen polycyclic aromatic hydrocarbons (PAHs) were added to the NPRI for 2000 at an alternate threshold. The reporting criteria are based on quantities released or transferred rather than quantities manufactured, processed or otherwise used, except in the case of wood preservation using creosote. Reporting of one or more of the 17 PAHs is required if, during the 2000 calendar year:

- the employee criteria were met, **and**
- any individual PAH was incidentally manufactured and the quantity of all of the PAHs released on site or transferred off site as the result of incidental manufacture together totalled 50 kg or more, or any of the 17 individual PAHs was released on site or transferred off site from a wood-preservation process using creosote.

Further information is provided in Chapter 4 of the *Supplementary Guide*.

Schedule 1, Part 4, Substances [Dioxins/Furans and Hexachlorobenzene (HCB)]

Polychlorinated dibenzo-*p*-dioxins (dioxins) and polychlorinated dibenzofurans (furans) are listed together in the NPRI for 2000 and are referred to as dioxins/furans. Hexachlorobenzene (HCB) was also added to the NPRI for 2000. Facilities engaged in certain activities are required to report dioxins/furans and HCB to the NPRI. There are no quantitative, substance-based reporting thresholds. Information to be reported for dioxins/furans and HCB differs from that required in other NPRI substance reports. Refer to Chapter 5 of the *Supplementary Guide* for further details.

Section 2: Reporting Criteria for Schedule 1, Part 1, Substances

In general, any person who owns or operates a facility must submit a report to the NPRI for a substance listed in Schedule 1, Part 1, of the 2000 *Canada Gazette* notice **only** if **all** of the following criteria are met:

- employees worked a total of 20 000 hours or more during the 2000 calendar year (equivalent to 10 full-time employees), **or** the facility was used for one or more of the following activities:
  - non-hazardous solid waste incineration of 100 tonnes or more of waste per year, including small combustion units, teepee burners and beehive burners
  - biomedical or hospital waste incineration of 100 tonnes or more of waste per year
  - hazardous waste incineration
  - sewage sludge incineration, or
  - wood preservation.

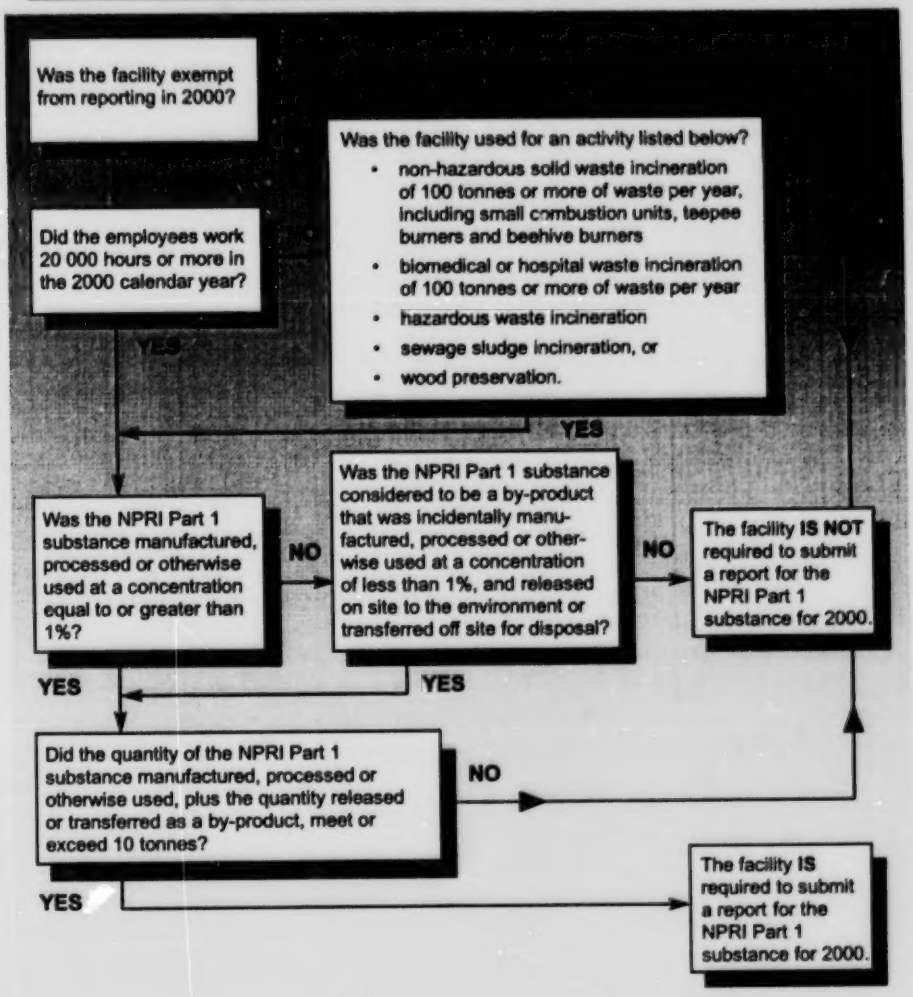
- the facility manufactured, processed or otherwise used 10 tonnes (10 000 kg) or more of an NPRI Part 1 substance in the 2000 calendar year, and

- the NPRI Part 1 substance was manufactured, processed or otherwise used at a concentration greater than or equal to 1% by weight, with the exception of NPRI substances considered to be by-products. The total weight of by-products must also be included in the calculation of the 10-tonne threshold for each NPRI Part 1 substance.

Figure 2 illustrates the steps to follow to determine if your facility is required to submit a report to the NPRI for a given NPRI Part 1 substance. A facility must meet **all the reporting criteria** before it is required to report on-site releases and transfers off site for disposal or recycling of the Part 1 substance.

Once you have determined that your facility is required to submit a report for an NPRI Part 1 substance, all on-site releases and all off-site transfers for disposal or recycling of that substance are reportable, regardless of their concentration or quantity (including "zero" releases and transfers).

The 2000 *Canada Gazette* notice states that the information required by the NPRI need only be reported to the Minister of the Environment if the facility owner or operator possesses the information or may reasonably be expected to have access to the information. **Consequently, the NPRI does not require additional monitoring or measurement of the quantities or concentration of substances released to the environment, beyond those already required under the provisions of other laws or regulations.** You are, however, required to show "due diligence" in obtaining the information required by the 2000 *Canada Gazette* notice.


Was the facility exempt from reporting in 2000?
Was the facility used for an activity listed below?
• non-hazardous solid waste incineration of 100 tonnes or more of waste per year, including small combustion units, teepee burners and beehive burners
• biomedical or hospital waste incineration of 100 tonnes or more of waste per year
• hazardous waste incineration
• sewage sludge incineration, or
• wood preservation.
Did the employees work 20 000 hours or more in the 2000 calendar year?
YES
YES
Was the NPRI Part 1 substance manufactured, processed or otherwise used at a concentration equal to or greater than 1%?
NO
Was the NPRI Part 1 substance considered to be a by-product that was incidentally manufactured, processed or otherwise used at a concentration of less than 1%, and released on site to the environment or transferred off site for disposal?
NO
The facility IS NOT required to submit a report for the NPRI Part 1 substance for 2000.
YES
YES
Did the quantity of the NPRI Part 1 substance manufactured, processed or otherwise used, plus the quantity released or transferred as a by-product, meet or exceed 10 tonnes?
NO
YES
The facility IS required to submit a report for the NPRI Part 1 substance for 2000.

Exempt Facilities

Certain facilities, or parts thereof, are exempt from reporting to the NPRI. **These exemptions apply to every substance in the NPRI.** Beginning with the 2000 reporting year, a new exemption was added for the practice of dentistry. A facility, or any part thereof, is exempt from reporting if used exclusively for:

- educating or training students, such as universities, colleges and schools
- research or testing
- the maintenance and repair of transportation vehicles, such as automobiles, trucks, locomotives, ships or aircraft
- the distribution, storage or retail sale of fuels
- the wholesale or retail sale of articles or products which contain NPRI substances, provided that the substances are not released to the environment during normal use at the facility
- the retail sale of NPRI substances
- growing, harvesting or managing renewable natural resources, such as fisheries, forestry or agriculture, **but not** those facilities that process or otherwise use their products
- mining, **but not** those facilities engaged in further processing of mined materials
- drilling or operating wells to obtain oil and gas products, **but not** those facilities engaged in further processing of these oil and gas products, or
- the practice of dentistry.

exempt from reporting to the NPRI for 2000.

Activities to Which the 20 000-hour Employee Threshold does not Apply

The criteria pertaining to total employee hours worked changed beginning with the 2000 calendar year. If your facility was used mainly or exclusively for one or more of the activities listed in Table 1, you must submit a report for any NPRI substance that meets its respective reporting criteria, regardless of the number of hours worked by employees.

In Table 1, NAICS codes are provided to assist in identifying facilities engaged in these activities. However, if your facility was used mainly or exclusively for any of these activities, reporting is required regardless of the NAICS code that best describes the facility. Complete descriptions of these activities are provided below.

TABLE 1: ACTIVITIES TO WHICH THE 20 000-HOUR EMPLOYEE THRESHOLD DOES NOT APPLY

ACTIVITY	NAICS CODE
Waste Incineration Activities	
(a) non-hazardous solid waste incineration of 100 tonnes or more of waste per year, including small combustion units, teepee burners and beehive burners	5622
(b) biomedical or hospital waste incineration of 100 tonnes or more of waste per year	5622
(c) hazardous waste incineration	5622
(d) sewage sludge incineration	5622
Wood Preservation Activity	
(e) wood preservation (using heat or pressure treatment, or both)	3211

Waste Incineration Activities

The first four activities listed in Table 1 are forms of waste incineration. ***Waste incineration***, for the purposes of the NPRI, only includes incineration that takes place in a waste incinerator. Waste incineration does not include open burning of wastes.

A ***waste incinerator*** is a device, mechanism or structure constructed primarily to thermally treat (e.g., combust or pyrolyze) a waste for the purpose of reducing its volume, destroying a hazardous chemical present in the waste, or destroying pathogens present in the waste. This includes facilities where waste heat is recovered as a by-product from the exhaust gases from an incinerator (e.g., energy-from-waste incinerators). This also includes conical (or teepee) burners and beehive burners. This does not include industrial processes where fuel derived from waste is fired as an energy source, such as industrial boilers.

a) Non-hazardous solid waste incineration of 100 tonnes or more of waste per year, including small combustion units, teepee burners and beehive burners

Non-hazardous solid waste means any waste, regardless of origin, which might normally be disposed of in a non-secure manner, such as at a sanitary landfill site, if not incinerated. It includes clean wood waste, i.e., waste from woodworking or forest product operations, including bark, where the wood waste has not been treated with preservative chemicals (e.g., pentachlorophenol) or decorative coatings. Non-hazardous solid waste incineration includes incineration of residential and other municipal wastes in conical (or teepee) burners, and clean wood waste in beehive burners.

A facility used for the incineration of 100 tonnes or more of non-hazardous solid waste per year is required to report to the NPRI if it met the substance criteria, regardless of the number of hours worked by employees.

b) Biomedical or hospital waste incineration of 100 tonnes or more of waste per year

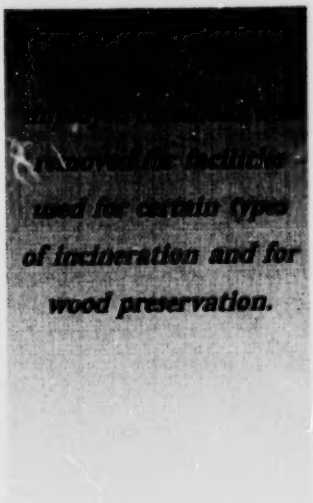
Biomedical waste is defined fully in Appendix 4 of the *Supplementary Guide*. Biomedical or hospital waste refers to waste that is generated by:

- human or animal health-care facilities
- medical or veterinary research and testing establishments
- health-care teaching establishments
- clinical testing or research laboratories, and
- facilities involved in the production or testing of vaccines.

Biomedical or hospital waste includes human anatomical waste and animal waste. It also includes microbiology laboratory waste, human blood and body fluid waste, and waste sharps that have not been disinfected or decontaminated. It does not include waste from animal husbandry, or waste that is controlled in accordance with the *Health of Animals Act* (Canada).

Wastes that are household in origin, or that are generated in the food production, general building maintenance and office administration activities of those facilities to which this definition applies, are not considered to be biomedical or hospital waste but rather to be non-hazardous solid waste.

A facility used for the biomedical or hospital waste incineration of 100 tonnes or more of waste per year is required to report to the NPRI if it met the substance criteria, regardless of the number of hours worked by employees.



c) Hazardous waste incineration

Hazardous waste is defined fully in Appendix 5 of the *Supplementary Guide*. Hazardous waste includes those wastes that are potentially hazardous to human health and/or the environment because of their nature and quantity, and that require special handling techniques. Hazardous waste incinerators must be licensed by the responsible jurisdiction. Hazardous waste incinerated in a mobile incinerator temporarily located at your facility must be included as part of this activity.

A facility used for the incineration of hazardous waste is required to report to the NPRI if it met the substance criteria, regardless of the number of hours worked by employees or the quantities incinerated.

d) Sewage sludge incineration

Sludge means a semi-liquid mass removed from a liquid flow of wastes. Sewage sludge means sludge from a facility treating wastewater from a sanitary sewer system.

A facility used for the incineration of sewage sludge is required to report to the NPRI if it met the substance criteria, regardless of the number of hours worked by employees or the quantities incinerated.

Wood Preservation Activities

Wood Preservation (using heat or pressure treatment, or both)

A facility used for wood preservation is required to report to the NPRI for Schedule 1, Part 1, substances and mercury (and its compounds) if it met the substance criteria, regardless of the number of hours worked by employees.

Wood Preservation Using Creosote

A facility used for wood preservation must report for any of the 17 individual PAHs released on site or transferred off site from a wood-preservation process using creosote, regardless of the number of hours worked by employees. This reporting criterion is found in Schedule 2, Part 3, of the 2000 *Canada Gazette* notice. Refer to Chapter 4 of the *Supplementary Guide* for details.

Wood Preservation Using Pentachlorophenol

A facility used for wood preservation using pentachlorophenol must report for dioxins/furans and HCB, regardless of the number of hours worked by employees or the quantities of dioxins/furans and HCB released or transferred. This reporting criterion is found in Schedule 2, Part 4, of the 2000 *Canada Gazette* notice. Refer to Chapter 5 of the *Supplementary Guide* for details.

Employee Criteria

If your facility was not used for one of the activities described above, the 20 000-hour employee threshold applies. The total number of hours worked includes paid vacation and sick leave. Owners, students, part-time and contract employees are included in this calculation. This threshold depends specifically on the number of hours worked by all employees at the facility during the calendar year and not on the number of persons working. When reporting to the NPRI, 10 "full-time employees" is equivalent to 20 000 hours worked.

A facility is not required to report to the NPRI if, during the 2000 calendar year:

- the total number of hours worked by all employees was less than 20 000 hours, AND
- the facility was not used for any of the activities listed in Table 1.

Schedule 1, Part 1, Substances

Four substances were added to Schedule 1, Part 1, of the 2000 *Canada Gazette* notice. The substances and their Chemical Abstracts Service (CAS) registry numbers are:

NAME	CAS No.
acrolein	107-02-8
4-*tert*-octylphenol	140-66-9
oxirane, methyl-, polymer with oxirane, mono(nonylphenyl)ether	37251-69-7
polymeric diphenylmethane diisocyanate, commonly referred to as PMDI	9016-87-9

Mercury (and its compounds) were moved to Schedule 2, Part 2, of the 2000 *Canada Gazette* notice. A facility is required to submit a report for mercury (and its compounds) if they were manufactured, processed or otherwise used, at any concentration, in a quantity of 5 kg or more. Further information on mercury and the other substances with alternate reporting thresholds is provided in the *Supplementary Guide*.

You must confirm that one or more of the 248 substances listed in Schedule 1, Part 1 were manufactured, processed or otherwise used at your facility. The NPRI substances are listed in alphabetical order in Appendix 1. Most of the substances have CAS numbers associated with them. The NPRI substances are listed by CAS number in Appendix 2. Substances that do not have a unique CAS number are noted with an asterisk (*).

Some groups of substances and individual substances are qualified in terms of their specific physical or chemical form, state or particle size. These qualifiers will determine whether your facility will be required to report for a given substance:

- **fume or dust**
  This qualifier for aluminum and vanadium refers to solids with particle diameters of 0.001 to 1 micron for fumes and 1 to approximately 100 microns for dust particles.

- **fibrous forms**
  This qualifier, applied to aluminum oxide, excludes the more common granular, powdered or fumed forms of alumina.

- **salts**
  Weak acids and bases are listed with this qualifier. Although the CAS number that appears on the NPRI list is specific to the acid or base, all salts of these listed substances must be reported as an equivalent weight of the acid or base.

- **compounds**
  Twelve NPRI Part 1 elements have this qualifier – antimony, arsenic, cadmium, chromium, cobalt, copper, lead, manganese, nickel, selenium, silver and zinc. The element mercury, listed in Part 2, also has this qualifier. The pure element and any substance, alloy or mixture must be reported as the equivalent weight of the element. No CAS number is provided for these substances.

Note that tetraethyl lead and lead (and its compounds) both appear on the NPRI list. Exclude tetraethyl lead when completing a report for lead (and its compounds). Complete a separate report for tetraethyl lead. Apply the reporting criteria to each substance separately.

- **friable form**
  Asbestos is the general name for several fibrous minerals and products. Only asbestos that is brittle and readily crumbled should be reported.

- **mixed isomers**
  This qualifier is used for mixtures of isomers which have the same chemical formula but different chemical structures. The substances with this qualifier are – cresol, dinitrotoluene, *n*-nonylphenol, toluenediisocyanate and xylene. Substances with this qualifier are usually found as mixtures. The total quantity of all isomers must be used in calculating the 10-tonne threshold quantity. Do not apply the 10-tonne reporting threshold to each individual isomer unless the pure isomer alone is manufactured, processed, otherwise used or is an NPRI by-product.

- **all isomers**
  This qualifier is applied to three hydrochlorofluorocarbons: HCFC-122, HCFC-123 and HCFC-124. Each HCFC is reported as an aggregate of the individual isomers that have the same chemical formula but different chemical structures. The total quantity of all isomers must be used in calculating the 10-tonne threshold quantity.

- **ionic**
  This qualifier, applied to cyanides, includes the salts of hydrogen cyanide but excludes organocyanides, nitriles and organometallic cyanide compounds such as ferrocyanide. In the mining industry, ionic cyanide is equivalent to "weak acid dissociable" cyanide.

- **total**
  For aqueous solutions of ammonia, this means both NH_3 and NH_4^+ expressed as ammonia.

- **yellow or white**
  This qualifier is the general description for the common allotropes of elemental phosphorus.

- **in solution at a pH of 6.0 or greater**
  This distinguishes nitrate ion in neutral or basic solution from nitric acid (pH of less than 6.0). If nitric acid is neutralized to a pH of 6.0 or greater, you must submit a report for both nitric acid and for nitrate ion in solution. Your release or transfer of nitric acid would be "zero" and your release or transfer of nitrate ion would reflect the quantity of neutralized nitric acid reported as nitrate ion in solution at a pH of 6.0 or greater.

In most cases, consider only the substances and the CAS numbers listed. For example, "styrene" is listed with its corresponding CAS number "100-42-5". The chemical description which corresponds to this CAS number does not include "polystyrene". There are no polymers on the NPRI list, only monomers.

An NPRI substance that is incidentally manufactured, processed or otherwise used at a facility and is released on site to the environment or transferred off site for disposal.

Material Safety Data Sheets (MSDSs) are an important source of information on the composition of purchased products. Suppliers of hazardous materials are required, as part of the Workplace Hazardous Material Information System (WHMIS), to supply MSDSs on request.

Nature of Activities

The terms "manufacture", "process" and "other use" are defined in Schedule 4 of the 2000 *Canada Gazette* notice. These activities are part of the reporting criteria. An NPRI Part 1 substance at a concentration equal to or greater than 1% or an NPRI Part 1 by-product at a concentration of less than 1%, are only included in the calculation of the 10-tonne reporting threshold if they had been manufactured, processed or otherwise used. An NPRI report does not have to be submitted for a substance that was never manufactured, processed or otherwise used at the facility during the reporting year.

Manufacture

The term "manufacture" means to produce, prepare or compound an NPRI substance. It also includes the incidental production of an NPRI substance as a *by-product* resulting from the manufacture, processing or other use of other substances.

The production of chlorine dioxide by a chemical plant is an example of manufacturing. The production of hydrochloric acid during the manufacture of chlorofluorocarbons is an example of incidental production.

Process

The term "process" means the preparation of an NPRI substance, after its manufacture, for distribution in commerce. Processing includes preparation of a substance with or without changes in physical state or chemical form. The term also applies to the processing of a mixture or formulation that contains an NPRI substance as one component, as well as the processing of "articles" (see "Other Definitions").

The use of chlorine (an NPRI substance) to manufacture hypochloric acid (not an NPRI substance) is an example of processing of chlorine. The use of toluene and xylenes to blend paint solvent mixtures is an example of processing without changes in chemical form.

Other Use

The terms "other use" and "otherwise used" encompass any use of an NPRI substance at a facility that does not fall under the definitions of "manufacture" or "process". This includes the use of the substance as a chemical processing aid, manufacturing aid or some other ancillary use. The use of trichloroethylene in the maintenance of equipment used for manufacturing and processing is considered an "other use". "Other use" does not include routine janitorial or facility grounds maintenance.

By-products

In 1995, the reporting criteria for NPRI Part 1 substances were changed to include by-products in the calculation of the 10-tonne reporting threshold. The reason for this change was to identify large-volume, low-concentration releases and transfers which normally would not trigger the reporting criteria of the NPRI. This change affects facilities that release to the environment or transfer for disposal large quantities of NPRI substances, but at concentrations of less than 1%. Some examples of affected sectors include, but are not limited to, power generation, aluminum smelting, and pulp and paper production.

Normally, only NPRI Part 1 substances in concentrations equal to or greater than 1% are included in the threshold calculations. The 1% concentration limit is consistent with the reporting requirements under the WHMIS. Minor constituents (with some exceptions) are not included on MSDS. **However, NPRI Part 1 by-products at less than 1% concentration by weight must be included in the calculation of the 10-tonne reporting threshold.**

The NPRI applies to any person who possesses or who may reasonably be expected to have access to the types of information requested. This reasonable expectation limits the reporting liability of facilities which cannot easily determine minor amounts of NPRI substances in their feedstock or process.

To determine if an NPRI Part 1 substance is a by-product, you need to consider all elements of the by-product definition.

> A "by-product" is an NPRI substance that is incidentally manufactured, processed or otherwise used at the facility at a concentration of less than 1% by weight, and is released on site to the environment or transferred off site for disposal.

The NPRI Part 1 substance is not relevant to the manufacture, process or other use of substances at the facility. It may be the product of an unwanted side-reaction or an impurity in a feedstock material. If the NPRI by-product was absent, there would be no effect on the process. As with substances reportable to the NPRI, it must have been manufactured, processed or otherwise used at the facility.

The NPRI Part 1 substance was manufactured, processed or otherwise used at a concentration of less than 1% by weight.

NPRI Part 1 substances which meet the above criteria are only considered by-products if they are released to the environment or transferred off site for disposal. Substances that are recycled or that remain in the final product are excluded from the by-product definition.

Example 1
Hydrogen fluoride is incidentally manufactured during aluminum smelting. For some large facilities, more than 10 tonnes may be released to the atmosphere at concentrations of less than 1%. The weight of the hydrogen fluoride by-product must be used in the calculation of the 10-tonne reporting threshold.

Example 2
Chromium and nickel are incidentally present in coal. During combustion, a portion of these metals is concentrated in the ash which is transferred off site for disposal and a portion of the metals is released in stack emissions. The weight of the heavy metal by-products must be included in the calculation of the 10-tonne reporting threshold.

Example 3
An NPRI Part 1 substance is present in trace amounts in a product that is repackaged for retail sale. The quantity of this substance released through spillage or through fugitive air emissions cannot be determined because the formulation of the product is proprietary or the substance concentration is not listed on the MSDS and more detailed information cannot be obtained from the supplier or manufacturer. Although this NPRI substance is considered a by-product, it is not included in the calculation of the 10-tonne reporting threshold because it is an unreasonable expectation that the facility could obtain information on the substance identity, concentration or quantity.

Other Definitions

Facility

A "facility" refers to all buildings, equipment, structures and other stationary items that are located on a single site or on contiguous or adjacent sites that are owned or operated by the same person and function as a single integrated site.

Article

An "article" is defined as a manufactured item that does not release an NPRI substance under normal conditions of processing or use. When articles such as metal sheets and bars are processed (punched, cut or sheared) and there are no releases, or the releases such as metal shearings or pieces are recycled 100% or with due care, the NPRI substances in that article need not be included in the threshold calculation. Exercising "due care" in ensuring 100% recycling means that the facility generated less than 1 kg of the NPRI substance as waste during the calendar year. Materials that are welded lose their article status since there are releases from the article during welding.

Exclusions

In calculating the quantity of an NPRI substance that is manufactured, processed or otherwise used at your facility, **do not include** the quantity of the substance that is:

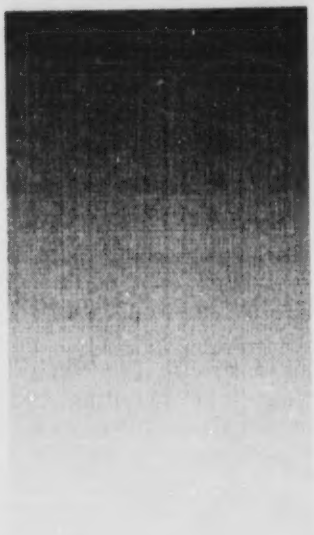
- **contained in articles that are processed or otherwise used**
- **contained in materials used as structural components of the facility** – The exclusion of structural components of the facility from the reporting threshold is limited to buildings and other fixed structures but does not include process equipment.
- **contained in materials used in routine janitorial or facility grounds maintenance** – The maintenance of processing equipment is not considered "routine janitorial" or "facility grounds" maintenance. For example, if manufacturing or processing equipment is cleaned with a solvent, the amount of NPRI substance(s) contained in the solvent should be included in the threshold calculation.
- **contained in materials used for personal use by employees or other persons**
- **used for the purpose of maintaining motor vehicles operated by the facility**
- **present in intake water or intake air** – This refers to water used for process cooling or air used either as compressed air or for combustion.

Calculating the 10-tonne Reporting Threshold

The 10-tonne reporting threshold is based on the quantity of an NPRI Part 1 substance manufactured, processed or otherwise used at the facility at concentrations equal to or greater than 1% **plus** the quantity of the same NPRI Part 1 substance, at less than 1% concentration, that is considered to be a by-product which is released on site to the environment or transferred off site for disposal.

When calculating the 10-tonne reporting threshold, **include** the quantity of an NPRI Part 1 substance that is:

- manufactured at a concentration equal to or greater than 1%
- processed at a concentration equal to or greater than 1%
- otherwise used at a concentration equal to or greater than 1%
- a by-product, at less than 1% concentration, released on site to the environment
- a by-product, at less than 1% concentration, transferred off site for disposal.



Any NPRI substances that are recycled off site and returned to the facility should be treated as the equivalent of newly-purchased material for the purposes of NPRI threshold determinations. Since an NPRI Part 1 substance may undergo many processes in a facility, care should be taken not to double-count process streams when calculating the reporting threshold.

NPRI Part 1 Substances Equal to or Greater than 1% Concentration

The total quantity of an NPRI Part 1 substance manufactured, processed or otherwise used at concentrations greater than or equal to 1%, at any time or in any part of the facility, **must** be used in the calculation of the 10-tonne reporting threshold.

The quantity of a substance received by a facility at 30% concentration and then diluted to less than 1% for use, is included in the threshold calculation. The same would apply for a substance received at the facility at less than 1% and subsequently concentrated to 5%.

Facilities that blend or formulate NPRI Part 1 substances such as solvents, must include the total quantity of the substance blended or mixed in the reporting threshold calculation since blending, mixing and formulating are considered processing, which is a reportable activity.

Facilities that repackage or transfer NPRI Part 1 substances between containers need only consider the total quantity of the substance repackaged or transferred.

If only a range of concentrations is available for a substance present in a mixture, use the average of the range for threshold determinations.

NPRI Part 1 Substances of Less than 1% Concentration

The total quantity of a by-product released on site to the environment or transferred off site for disposal **must** be used in the calculation of the 10-tonne reporting threshold. This is the only circumstance where the quantity of an NPRI Part 1 substance at a concentration of less than 1% is used in calculating the 10-tonne reporting threshold. **However, once the reporting criteria have been met, all on-site releases and off-site transfers for disposal or recycling must be reported, regardless of the substance's concentration.**

The following examples illustrate application of the by-product definition:

Example 1
A facility uses a pre-polymer mixture which contains unreacted di-*n*-octyl phthalate monomer at a concentration of less than 1%. The monomer remains in the final product after the processing is complete. The polymer is used to make articles sold for distribution. The unreacted monomer is not released and remains in the product distributed in commerce and, therefore, is not included in calculating the 10-tonne threshold.

Example 2
Gases produced during coking of coal are recovered and used to supply heat and are therefore not considered by-products. The quantity produced at concentrations of less than 1% should not be used in the calculation of the reporting threshold.

Example 3
Many industrial processes involve separation but not all create by-products. Distillation of crude oil, for example, produces a number of secondary substances intended for distribution in commerce or further use. These are not by-products for the purpose of reporting to the NPRI.

Example 4

Metal cuttings, transferred off site for disposal, contain alloyed chromium at a concentration of less than 1%. The chromium is an essential component of the alloy, therefore it is not incidentally processed and is not considered to be a by-product. The chromium in the metal cuttings is not included in the calculation of the 10-tonne reporting threshold.

Example of Calculating the Reporting Threshold

The following example illustrates the calculation of the 10-tonne reporting threshold. This facility has several processes in which an NPRI Part 1 substance is manufactured, processed or otherwise used.

1. In the first process, NPRI substance "A" is present at 5% concentration and is included in the threshold calculation.
2. In the second process, a raw material added to the process is pure substance "A". It is also included in the threshold calculation, regardless of any subsequent dilution in the process. This also applies to a substance received at the facility at less than 1% which is subsequently concentrated to more than 1% in the process.
3. The weight of substance "A" in the raw material used in process 3 is not included in the threshold calculation because the concentration is less than 1%. Note, however, that since the facility in this example must report because it meets the 10-tonne reporting threshold, it is required to take into account and report releases and transfers from all processes including those, such as process 3, which were not used in the threshold calculations.
4. The weight of substance "A" produced and released from process 4 is included in the calculation because it is a by-product. The concentration criterion does not apply to by-products.

MATERIAL CONTAINING SUBSTANCE "A"	TOTAL WEIGHT OF MATERIAL CONTAINING SUBSTANCE "A"	CONCENTRATION OF SUBSTANCE "A" IN THE MATERIAL	NET WEIGHT OF SUBSTANCE "A"
Process stream 1	150 tonnes	5.00%	7.5 tonnes
Raw material in process 2	2 tonnes	100.00%	2.0 tonnes
Raw material in process 3	45 tonnes	0.20%	n/a
By-product released from process 4	10 000 tonnes	0.01%	1.0 tonne
		Total weight of substance "A"	10.5 tonnes

In this example, the facility would be required to file a report to the NPRI (assuming it also meets the 20 000-hour employee threshold) because the total amount of substance "A" manufactured, processed or otherwise used at the facility exceeds 10 tonnes for a given calendar year.

Note that the facility must submit a report even if the on-site releases or off-site transfers for disposal or recycling of substance "A" are zero.

Threshold calculations do not need to be reported to the NPRI. Their purpose is to determine the substance for which a facility is required to report on-site releases and transfers off site for disposal or recycling. Keep this information in your files.

If You Are Not Required to Report

If you have concluded that you are not required to report for your facility, either because it is an exempt facility or it does not meet all the reporting criteria, advise your regional NPRI office (listed on the inside front cover) to update our records and mailing lists. Please refer to the *Supplementary Guide* for the reporting criteria for mercury (and its compounds), PAHs, dioxins/furans and HCB. **Both this *Guide* and the *Supplementary Guide* should be consulted by owners and operators of facilities to determine if they must report for any NPRI substances.**

If You Are Required to Report

If you have concluded that you are required to report for your facility, use the electronic reporting form to complete your report. Send your report on disk and a signed Statement of Certification to your regional NPRI office (listed on the inside front cover), postmarked or courier-dated no later than **June 1, 2001**. If you do not have access to a computer, a paper reporting form can be provided by your regional NPRI office. Extra copies of the reporting package can also be ordered from your regional NPRI office. The reporting package is available in the following formats:

- a CD-ROM containing the Windows reporting software and guidance documents
- the Windows reporting software on 3.5" IBM-compatible diskettes
- the printed version of the *Guide for Reporting to the National Pollutant Release Inventory – 2000*, or
- the printed version of the *Supplementary Guide for Reporting to the National Pollutant Release Inventory – Alternate Thresholds – 2000*.

Section 3

Completing the Reporting Form

Introduction

This section describes the information required and the procedures to follow to comply with the 2000 *Canada Gazette* notice. An electronic reporting form was developed to facilitate data input for reporters, to provide on-line help to the person completing the report and to reduce errors in data transcription. For ease of reference, this section follows the same order, titles and numbering system as the electronic reporting form.

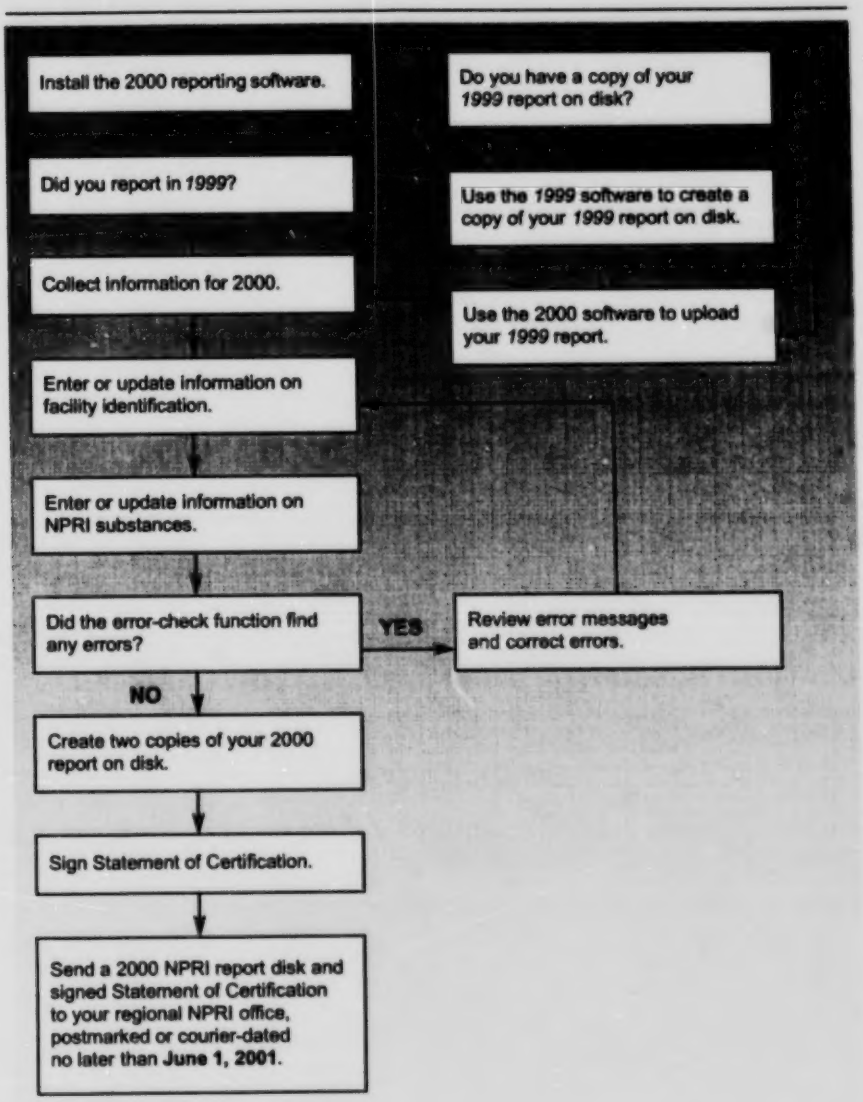
A typical procedure, as shown in Figure 3, is to install the 2000 reporting software and upload the data from your 1999 report if it is available. Next, update the information on reporting facilities, substances, off-site facilities and surface water bodies. Use the software's "error check" function to verify that the report is free of errors and then create an NPRI report disk. Finally, submit the report disk with a Statement of Certification signed by an official of the company (usually identified in field A16.0) to Environment Canada.

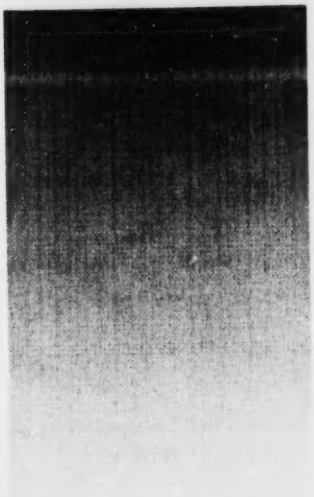
The NPRI electronic reporting form, and this section of the guide, are organized as follows:

- Section A1 Facility Identification
- Section B1 Substance Information
- Section B10 On-site Releases to the Environment
- Section B20 Off-site Transfers for Disposal or Recycling
- Section B30 Pollution-Prevention Activities
- Section B40 Production Ratio and Activity Index

Please review the explanations provided for these sections before completing your NPRI report for 2000.

The reporting software has many error-checking routines to help ensure that the information provided is complete. The Windows software completes its error check when leaving a screen. All warnings in the reporting form can be overridden to allow you to complete the form. However, the NPRI report must be error-free before the software will allow a disk to be copied for submission to Environment Canada. See Section 4 – "Returning Information to Environment Canada".


Install the 2000 reporting software.
Did you report in 1999?
Collect information for 2000.
Enter or update information on facility identification.
Enter or update information on NPRI substances.
Did the error-check function find any errors?
YES
NO
Review error messages and correct errors.
Create two copies of your 2000 report on disk.
Sign Statement of Certification.
Send a 2000 NPRI report disk and signed Statement of Certification to your regional NPRI office, postmarked or courier-dated no later than June 1, 2001.
Do you have a copy of your 1999 report on disk?
Use the 1999 software to create a copy of your 1999 report on disk.
Use the 2000 software to upload your 1999 report.



Facility Identification

From the "Main Menu" of the NPRI software, select the "View/Enter/Edit Data" menu and then select "Reporting Facilities". The electronic reporting form allows NPRI reports for more than one facility to be created. This is useful for company coordinators who are submitting NPRI reports for several facilities. You can add, delete or edit a facility record from the facility list.

At any time while completing the report, you can save the information you have entered or abandon the changes you have made. Save your work often to avoid losing data if the hardware or software fail.

A1.0 NPRI ID, Web Site Address, Dun and Bradstreet Number

The "Reporting Year" field cannot be changed. This is the calendar year for which you are required to report to the NPRI and for which you will be providing information.

A1.1 NPRI ID

If an NPRI report was previously submitted for your facility, it was assigned a **permanent** NPRI identification number. The NPRI ID is specific to the facility and does not change even if the ownership of the facility has changed. You will find this number on the mailing label of the 2000 NPRI package or on the correspondence sent to your company/facility. If you cannot find your NPRI ID number, call your regional NPRI office (listed inside the front cover).

If this is your first year of reporting, place the cursor in the NPRI ID field marked "NEW REPORT". Generate a temporary identification number by clicking on the "Generate a temporary NPRI ID" button. A permanent NPRI ID for your facility will be assigned by Environment Canada at a later date.

A1.2 Language

Correspondence from Environment Canada will be in the language identified, i.e., English or French. The language code determines which language is used by the software when printing reports.

A1.4 Web Site Address

This is an optional field for you to provide the Web site address of your facility or parent company. The address you provide will become part of the on-line NPRI database and will allow visitors to link directly to your Web site for more information.

A1.5 Dun and Bradstreet (D-U-N-S) Number

D-U-N-S is a nine-digit number that Dun and Bradstreet uses to identify companies in its financial database. This will allow the NPRI to identify the corporate structures relating facilities to their parent companies. A large organization is likely to have many D-U-N-S numbers, linking their various headquarters, subsidiaries, branches and facilities. Report the D-U-N-S number of the facility. This number may be available from your facility's treasurer or financial officer. If the facility doesn't have a D-U-N-S number, but the parent company does, report that number in field A3.0 "Identification of Parent Companies". If you need to verify your D-U-N-S number or obtain a new one, call the Dun and Bradstreet Customer Service Centre at 1-800-463-6362, or (416) 463-6362; Fax: (905) 568-5815. For more information, you can visit the Dun and Bradstreet Web site at <www.dnb.com>.

A2.0 Facility Identification and Site Address

The NPRI database fully supports uppercase/lowercase text entry which improves legibility. DATA ENTRY IN ALL UPPERCASE CHARACTERS IS DISCOURAGED. Please take the time to correctly enter your facility identification as you wish it to appear in the publicly-accessible database. This information will be used to identify your facility in all Environment Canada reports and data products and should therefore be selected carefully to ensure that your facility is correctly identified.

Geographic coordinates for facilities are determined by Environment Canada. Facilities may be asked to provide the information needed to determine the geographic coordinates of the facility.

A2.1 Company Name

Enter your company name. **This field is mandatory.** If your company owns more than one reporting facility, please ensure that the company name is used consistently for all facilities.

A2.2 Facility Name

Enter the name of the facility or any other information which, in addition to the "Company Name", completely identifies the facility. You may omit the "Facility Name" if the "Company Name" alone completely identifies the facility.

COMPANY NAME	FACILITY NAME
Specialty Pharmaceuticals	Liquids Plant
Trans Canada Airlines	Calgary
Canadian Refineries	Alberta Processing Plant
International Manufacturing	ABC Manufacturing Division

A2.3 and A2.4 Street Address

The "Street Address" is the site address of the facility. **Do not use a post office box or mailing address as the street address.** A mailing address can be given when identifying a public contact, technical contact or company coordinator. Enter the street name and number and other identifiers such as suite number or building designation. For rural addresses, where a street address is not available, enter the lot and concession numbers, and the township or its equivalent.

A2.5 City/District

Enter the name of the city, town, village, district or township where the facility is located.

A2.6 Province or Territory

Enter the name of the province or territory where the facility is located. Choose the name or abbreviation from the pick-list that is available while the cursor is in the "Province" field.

A2.7 Postal Code

Enter the postal code. It will be formatted automatically (e.g., V7M 3H7).

A3.0 Identification of Parent Companies

For the purposes of the NPRI, a parent company is defined as the highest level company or group of companies that directly control your facility. If your company is not owned or controlled by another parent company, select "No" for the question in field A3.1, "Is the facility controlled by another company or companies?" Otherwise select "Yes" in field A3.1. This opens the "Identification of Parent Companies" screen

in which you can report the names, addresses and percent ownership of controlling parent companies. The Dun and Bradstreet (D-U-N-S) number identifies the parent company and its corporate relationship to the reporting facility. Complete this field as described in A1.5. The province, territory or U.S. state codes can be found in pick-lists available while the cursor is in these fields. Field P1.8 "Zip Code or Other" is provided for addresses in the U.S. or in other countries. The "Country" field (P1.10) must be completed only if the address is outside Canada or the U.S.

A4.0 Facility Public Contact

Enter the name, position title, e-mail address, telephone and facsimile numbers of the facility's public contact. The public contact does not have to be the same person who prepares the report or signs the Statement of Certification and does not necessarily need to be someone at the reporting facility. However, this person should be able to answer questions from the public about the report. A position title alone, such as "Environmental Coordinator", can be used to identify the public contact. The facility public contact will be identified in the NPRI database available to the public. **If these fields are left blank, the technical contact (in field A6.0) will be listed as the public contact in the NPRI database.**

A5.0 Facility Public Contact Address

Complete this field if the mailing address for the public contact is different from the facility's site address (A2.0). The province, territory or U.S. state names can be found in pick-lists while the cursor is in these fields. Field A5.9 "Zip Code/Other" is provided for addresses in the U.S. or in other countries. The "Country" field (A5.10) must be completed only if the address is outside Canada or the U.S.

A6.0 Facility Technical Contact

Enter the name, position title, e-mail address, telephone and facsimile numbers of a technical representative who can be contacted by Environment Canada for clarification of the report. This person should be familiar with the details of the report and be able to answer questions about the information provided. **The technical contact will be listed as the public contact in the NPRI database if a public contact is not named in field A4.0.** Unless a company coordinator is identified in field A8.0, the technical contact will receive all information, mailings and inquiries from Environment Canada. **A consultant can be the technical contact as long as a company coordinator is identified in field A8.0.**

A7.0 Facility Technical Contact Address

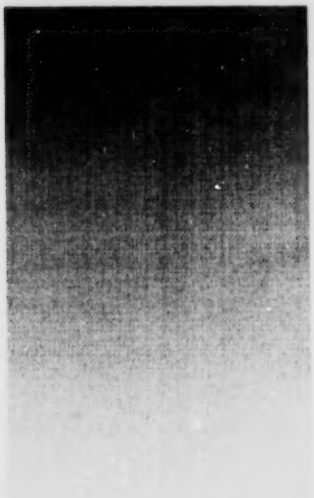
If the mailing address for the technical contact is different from the facility's site address (A2.0), complete this field as described in A5.0.

A8.0 Company Coordinator

In addition to a facility technical contact, some companies may coordinate reports for several facilities through a central contact. If you answer "Yes" to the question "Would you like to have information sent to a central contact?", provide the name, position title, e-mail address, telephone and facsimile numbers for the company coordinator (fields A8.1 to A8.8). **Correspondence from Environment Canada will be addressed to the company coordinator. If there is no coordinator, correspondence will be sent to the technical contact.**

A9.0 Company Coordinator Address

If the mailing address for the company coordinator is different from the facility's site address (A2.0), complete this field as described in A5.0.



A10.0 Industrial Classification Codes

Industrial classifications are a means of identifying different types of businesses and industries. The NPRI has adopted the North American Industry Classification System (NAICS Canada) as the standard for identifying industrial sectors to enable better comparisons of NPRI data with similar inventories in the U.S. and Mexico. This year, the NPRI will also continue to collect Canadian and American Standard Industrial Classification (SIC) data to retain continuity with historical data.

North American Industry Classification System (NAICS)

The NAICS was developed by Statistics Canada, the U.S. Office of Management and Budget and Mexico's Instituto Nacional de Estadistica Geografia e Informatica, to enable the respective national agencies to collect comparable statistical data (Statistics Canada, 1998). It has replaced the 1980 Standard Industrial Classification as the standard for classifying industries by Statistics Canada. Statistics Canada has provided complete details of NAICS Canada on its Web site at <www.statcan.ca/english/Subjects/Standard/index.htm>.

You can order a copy of the NAICS Canada Manual (printed version, Catalogue No. 12-501-XPE; CD-ROM, Catalogue No. 12-501-XCB) on-line, toll free at 1-800-700-1033 (voice) or 1-800-889-9734 (fax), or through Statistics Canada Regional Reference Centres.

The NAICS Canada consists of 20 sectors, 99 subsectors, 321 industry groups, 734 industries and 921 national industries. Industries within these sectors are grouped according to their production processes rather than the goods or services produced. The numbering system that has been adopted is a six-digit code, of which the first five digits are used by the three countries to produce comparable data. The first two digits designate the sector, the third digit designates the subsector, the fourth digit designates the industry group and the fifth digit designates industries. For example, the first two digits "21" designate the utilities sector comprised of industries engaged in operating gas, electrical and water utilities. The four-digit NAICS code "2111" refers to the electric power generation, transmission and distribution industry group. Within this group, "21111" refers specifically to electric power generation while "21112" is electric power transmission, control and distribution. The sixth digit is used to designate national industries. At this level, the respective national agencies are free to define classifications relevant to their own economies. In this example, hydro-electric, fossil-fuel-electric and nuclear-electric power generation have the NAICS Canada codes "211111", "211112", and "211113", respectively.

Sector and subsector NAICS classifications and their corresponding two-, three- and four-digit codes are listed in Appendix 4. The electronic reporting form provides a pick-list of the NAICS codes. If you are unsure about the correct NAICS code for your facility, please contact your regional NPRI office.

Standard Industrial Classification (SIC) Codes

Standard Industrial Classification (SIC) codes are numerical identifiers for different types of businesses and industries (Statistics Canada, 1989). The first two digits of a four-digit SIC code define a major business sector, while the last two denote a facility's specialty within that sector. For example, the first two digits (37) of the Canadian SIC code "3751" represent the chemical industry in general, and the last two digits (51) represent the paints and varnishes industry. Code "3741" represents the same major sector but denotes the pharmaceutical industry. Two-digit Canadian and American SIC codes are listed in Appendices 5 and 6, respectively. The electronic reporting form provides a pick-list of two-digit Canadian SIC codes. The software also provides

concordance tables of four-digit Canadian SIC codes and their corresponding U.S. SIC codes. If you are unsure about the correct SIC code for your facility, please contact your regional NPRI office.

A10.1 Two-digit Canadian SIC Code

Enter the two-digit Canadian SIC code that best represents your facility as found in Appendix 5 or access the pick-list and choose the appropriate number. Your facility may be engaged in several different activities that are described by more than one SIC code. If so, use the SIC code that describes the activity having the greatest value.

A10.2 Four-digit Canadian SIC Code

Based on the two-digit code entered in field A10.1, the software will provide a pick-list of four-digit codes associated with your industrial sector. Select the most appropriate Canadian SIC code for your facility according to the description provided.

A10.3 Four-digit U.S. SIC Code

Based on the Canadian SIC code entered in field A10.2, the software will provide a pick-list of corresponding four-digit U.S. codes. As some Canadian classifications are broader than the U.S. codes, there may be more than one U.S. code for each Canadian code. **A common error is to select the first choice offered by the software.** Be certain to select the appropriate U.S. SIC code for your facility.

A10.4 Two-digit NAICS Code

Choose the two-digit code or range of codes which best describes the industrial sector in which your facility operates. A pick-list of two-digit codes is available or you may refer to the NAICS codes in Appendix 4. Note that some sectors, such as manufacturing (31-33), span several two-digit codes. Use the pick-list to select the correct range of two-digit NAICS codes.

A10.5 Four-digit NAICS Code

Based on the two-digit NAICS code entered in field A10.4, the software will provide a pick-list of four-digit NAICS codes for the corresponding subsectors. A list of four-digit NAICS codes is also given in Appendix 4.

A10.6 Six-digit NAICS Canada Code

Finally, based on the four-digit NAICS code entered in field A10.5, the software will provide a pick-list of six-digit NAICS Canada codes for the corresponding national industries.

A11.0 Employee Criteria

A11.1 Number of Full-time Employees

Enter the number of full-time (or equivalent) employees at your facility. One "full-time employee" (or equivalent) is defined as 2 000 worker-hours per year (including paid vacation, overtime and sick leave). The definition depends on the number of hours worked by all employees at the facility during the calendar year and not on the number of persons working.

To determine the number of full-time employees (or equivalent) working for your facility during the calendar year, total the hours worked by all employees, including the time worked by students, part-time and contract employees and sales and support staff at the facility, and divide the total by 2 000 hours. If the owner worked at the facility, his/her time must also be included in the full-time employee calculation. Working hours spent by sales people must be included in the calculation if they had an office on site, even though they may have spent part of their time away from the facility. Time spent by contract workers at the facility must also be included in the calculation.

removed for facilities used for certain types of incineration and for wood preservation.

A11.2 Activities to Which the 20 000-hour Employee Threshold does not Apply

In previous years, a facility was exempt from reporting to the NPRI if, during the reporting year, the total number of hours worked by all its employees was less than 20 000 hours (equivalent to 10 full-time employees). Starting with the 2000 reporting year, the 20 000-hour employee threshold was removed for facilities used for certain types of incineration and for wood preservation. Refer to Section 2 for more information on these activities. The *Supplementary Guide* explains how the employee criteria relate to reporting for substances with alternate reporting thresholds.

If your facility was used exclusively or mainly for one of the incineration activities (A11.2.a - A11.2.d), you must submit an NPRI report for dioxins/furans and HCB. You may also have to submit a report for any NPRI Part 1 substances, mercury (and its compounds) or PAHs, provided their respective substance criteria are met. If any of the incineration activities (A11.2.a - A11.2d) are chosen, the corresponding fields in A12.1 will be checked.

Wood preservation alone (A11.2.e), does not trigger NPRI reporting. You may also have to submit a report for any NPRI Part 1 substances and mercury (and its compounds) provided their respective substance criteria are met. If your facility used pentachlorophenol, select field A12.2. You must submit reports for dioxins/furans and HCB (see Chapter 5 of the *Supplementary Guide*). If your facility used creosote, select field A13.1. You may have to submit NPRI reports for PAHs (see Chapter 4 of the *Supplementary Guide*).

Was the facility used mainly or exclusively for:

A11.2.a **Non-hazardous solid waste incineration (≥ 100 tonnes/year) –** Non-hazardous solid waste means any waste, regardless of origin, which might normally be disposed of in a non-secure manner, such as at a sanitary landfill site, if not incinerated. It includes clean wood waste, i.e., waste from woodworking or forest product operations, including bark, where the wood waste has not been treated with preservative chemicals (e.g., pentachlorophenol) or decorative coatings. Non-hazardous solid waste incineration includes incineration of residential and other municipal wastes in conical (or teepee) burners, and clean wood waste in beehive burners.

A11.2.b **Biomedical or hospital waste incineration (≥ 100 tonnes/year) –** Biomedical waste is defined fully in Appendix 4 of the *Supplementary Guide*. Biomedical or hospital waste refers to waste that is generated by:

- human or animal health-care facilities
- medical or veterinary research and testing establishments
- health-care teaching establishments
- clinical testing or research laboratories, and
- facilities involved in the production or testing of vaccines.

Biomedical or hospital waste includes human anatomical waste and animal waste. It also includes microbiology laboratory waste, human blood and body fluid waste, and waste sharps that have not been disinfected or decontaminated. It does not include waste from animal husbandry, or waste that is controlled in accordance with the *Health of Animals Act* (Canada).

Wastes that are household in origin, or that are generated in the food production, general building maintenance and office administration activities of those facilities to which this definition applies, are not considered to be biomedical or hospital waste but rather to be non-hazardous solid waste.

A11.2.c **Hazardous waste incineration** – Hazardous waste is defined fully in Appendix 5 of the *Supplementary Guide*. Hazardous waste includes those wastes that are potentially hazardous to human health and/or the environment because of their nature and quantity, and that require special handling techniques. Hazardous waste incinerators must be licensed by the responsible jurisdiction. Hazardous waste incinerated in a mobile incinerator temporarily located at your facility must be included as part of this activity.

A11.2.d **Sewage sludge incineration** – Sludge means a semi-liquid mass removed from a liquid flow of wastes. Sewage sludge means sludge from a facility treating wastewater from a sanitary sewer system.

A11.2.e **Wood preservation** – Select this if your facility was used mainly or exclusively for wood preservation, using heat or pressure treatment or both. If your facility used pentachlorophenol, also select field A12.2. If your facility used creosote, also select field A13.1.

A11.2.f **None of the above** – If your facility was not used for one of the activities described above, the 20 000-hour employee threshold applies when reporting to the NPRI for any NPRI substance.

A12.0 are required to report dioxins/furans and HCB to the NPRI.

A12.0 Activities Relevant to the Reporting of Dioxins/Furans and Hexachlorobenzene

The criteria for reporting NPRI Part 4 substances is based on specific activities in which a facility engaged, not quantities released or transferred. A facility may have engaged in one of these activities, even if it was not the sole activity at the facility. A facility engaged in one or more of the activities listed below (A12.1.a - A12.1.p) must submit reports for dioxins/furans and HCB if it also met the 20 000-hour employee threshold. If, however, the facility was used mainly or exclusively for any of the incineration activities (A12.1.a - A12.1.d), or for wood preservation using pentachlorophenol (A12.1.q and A12.2), the facility must report releases and transfers of dioxins/furans and HCB regardless of the number of hours worked by employees. Information to be reported for dioxins/furans and HCB differs from that required in other NPRI substance reports. Refer to Chapter 5 of the *Supplementary Guide* for further details.

A12.1.a **Non-hazardous solid waste incineration (≥ 100 tonnes/year)** – See A11.2.a.

A12.1.b **Biomedical or hospital waste incineration (≥ 100 tonnes/year)** – See A11.2.b.

A12.1.c **Hazardous waste incineration** – See A11.2.c.

A12.1.d **Sewage sludge incineration** – See A11.2.d.

A12.1.e **Base metals smelting (including copper, lead, nickel and zinc)** – refers to copper, lead, nickel and zinc. This activity does not include smelting of aluminum or any other metals. It also does not include the smelting of secondary lead or secondary aluminum which are identified in field A.12.1.f and A12.1.g, respectively.

A12.1.f **Smelting of secondary lead** – refers to lead-bearing scrap or lead-bearing materials, other than lead-bearing concentrates derived from a mining operation. Facilities engaged in smelting of lead-bearing concentrates derived from a mining operation are considered to be base metals smelters (see A12.1.e).

A12.1.g **Smelting of secondary aluminum** – refers to aluminum-bearing scrap or aluminum-bearing materials. Secondary aluminum smelting involves two processes – pre-cleaning and smelting – both of which may produce dioxins/furans emissions.

A12.1.h **Manufacturing of iron using a sintering process** – Sintering is the welding together and growth of contact area between two or more initially distinct particles at temperatures below the melting point, but above one-half of the melting point (in degrees Kelvin). In sintering operations, dioxins/furans may be formed as unwanted by-products during high-temperature decomposition and combustion of raw materials containing chlorine and organic compounds.

A12.1.i **Operation of electric arc furnaces in steel manufacturing** – In an electric arc furnace, material is heated by the heat energy released from an electric arc. The electric arc is a component of an electric circuit, like a resistor, but with its own peculiar characteristics. Dioxins/furans may be formed as unwanted by-products during high-temperature decomposition and combustion of raw materials containing chlorine and organic compounds.

A12.1.j **Operation of electric arc furnaces in steel foundries** – In an electric arc furnace, material is heated by the heat energy released from an electric arc during which dioxins/furans and HCB may be formed.

A12.1.k **Production of magnesium** – Production of magnesium from magnesium chloride by electrolysis may result in the generation of dioxins/furans and HCB.

A12.1.l **Manufacturing of portland cement** – Portland cement is a fine greyish powder consisting of four basic materials – lime, silica, alumina and iron compounds. Cement production involves heating (pyroprocessing) the raw materials to a very high temperature in a rotating kiln to induce chemical reactions that produce a fused material called clinker. The cement clinker is further ground into a fine powder, then mixed with gypsum to form portland cement.

A12.1.m **Production of chlorinated organic solvents or chlorinated monomers** – This activity is limited to the intentional manufacturing of chlorinated organic solvents or chlorinated monomers, and does not include coincidental production.

A12.1.n **Combustion of fossil fuel in a boiler unit to produce electricity (≥ 25 megawatts)** – This activity is limited to the combustion of solid or liquid fuel (coal, petroleum or any other liquid or solid fuel derived from such) in a boiler unit, for the purpose of producing steam for the production of electricity, with a generating capacity of 25 megawatts or greater of electricity. This clearer definition was provided in the amendment to the 2000 *Canada Gazette* notice. It includes electric power-generation utilities and large industrial facilities co-generating electric power using waste heat from industrial processes. It does not include combustion of natural gas or other fuels that are gaseous in form at ambient pressure and temperature. It also does not include diesel generators, which are not boiler units.

A12.1.o **Combustion of salt-laden logs in pulp & paper sector** – Pulp and paper boilers burning salt-laden wood are unique to British Columbia. Dioxins/furans are emitted from the burning of salt-contaminated hog fuel. Logs transported and stored in salt water take up chlorine into the bark. The bark is stripped from logs and ground up with other waste wood to produce hog fuel. The material is then used as boiler fuel to produce heat and electrical energy for pulp and paper processes. The *Canada-Wide Standards for Dioxins and Furans* state that every boiler covered by the Standards will be tested twice each year to determine the level of dioxins/furans air emissions for the years prior to 2003, and annually for the year 2003 and beyond.

A12.1.p Combustion of fuel in kraft liquor boilers in pulp & paper sector – A kraft liquor boiler burns black liquor, composed mostly of lignin, the residue from the digester in a kraft (sulphate) pulping process. The boiler recovers chemical products from the combusted black liquor, which are later recycled, and also produces steam which is used in mill process operations.

A12.1.q None of the above – If your facility was not engaged in one of the activities described above, then your facility may not have to submit reports for dioxins/furans and HCB. The only other activity that would trigger reporting is if your facility was used for wood preservation using pentachlorophenol (see field A12.2).

A12.2 Was the Facility Used for Wood Preservation Using Pentachlorophenol?

Wood preservation means the preservation of wood using heat or pressure treatment, or both. If your facility was used for wood preservation using pentachlorophenol, you must submit substance reports for dioxins/furans and HCB, **regardless of the number of hours worked by employees**. Refer to Chapter 5 of the *Supplementary Guide* for more information regarding this activity. If selected, field A11.2.e – Wood Preservation, will be automatically selected.

A13.0 Activity Relevant to the Reporting of Polycyclic Aromatic Hydrocarbons (PAHs)

A13.1 Was the Facility Used for Wood Preservation Using Creosote?

Wood preservation means the preservation of wood using heat or pressure treatment, or both. There is no 50-kg reporting threshold for polycyclic aromatic hydrocarbons (PAHs) released or transferred from a wood-preservation process using creosote, since the PAHs are contained in the creosote and not incidentally manufactured. A facility used for wood preservation must report any of the 17 individual PAHs incidentally manufactured and released on site or transferred off site from a wood-preservation process using creosote, **regardless of the number of hours worked by employees**. Refer to Chapter 4 of the *Supplementary Guide* for more information regarding this activity. If selected, field A11.2.e – Wood Preservation, will be automatically selected.

A14.0 Other Environmental Regulations or Permits (optional)

This optional field identifies other government organizations, agencies or programs to which you report environmental data. These identifiers may be municipal, provincial, territorial or regional operating permit numbers, certificates of approval or numbers used to identify your facility for a survey on releases or transfers to the environment.

If you wish to provide the environmental identification numbers that exist for your facility, select "Yes" for question A14.1, "Do you report under other environmental regulations or permits?" The electronic form will present a pop-up screen after responding "Yes" to this question. Enter the identification number or permit number in the column entitled "ID Number" and the government and program requesting the data in the column entitled "Government Department, Agency or Program Name".

If you do not report under any other environmental regulations, select "No". If you choose not to complete this field, select "Decline to answer".

Example 1

In **Ontario**, include the *Ontario Hazardous Waste Generator Registration Number* (OHWGRN). The OHWGRN is a nine-digit alphanumeric number (e.g., ON1234500) assigned to each facility under Ontario Regulation 347 (*Environmental Protection Act of Ontario*).

The NPRI report submitted to Environment Canada must include a Statement of Certification signed by an official of the company.

Example 2
Facilities located in **Alberta** handling hazardous waste have to register for, and may have more than one, provincial ID number(s), assigned by Alberta Environmental Protection. Facilities receiving, consigning or transporting hazardous wastes are assigned provincial ID numbers. The ID number is an eight-digit alphanumeric number (e.g., ABR09999).

A15.0 Comments

A15.1 Comments (Facility)

This field is for comments regarding the facility information provided in this section or on any issue pertaining to your NPRI report in general. For example:

- an explanation of why a substance is no longer reported to the NPRI
- details of a plant closure that resulted in reduced releases and transfers of all substances reported by the facility, or
- details of a one-time site remediation program which dramatically increased the off-site transfers of several substances.

These comments will appear in the NPRI database available to the public and are your opportunity to provide context for the information reported to the NPRI. Comments specific to a substance being reported should be provided in the "Substances" report.

A15.2 Comments (Pollution Prevention)

In addition to the pollution-prevention (P2) activities reported for a specific substance in B30.0, information on general P2 activities such as water- and energy-conservation initiatives can be provided in this comments field. Facilities are encouraged to provide additional information describing their P2 initiatives and the results achieved (e.g., environmental results, economic benefits, etc.).

A16.0 Company Official Certifying this Submission

A "Statement of Certification" can be printed through the "Reports Menu". **If you are unable to print a Statement of Certification, contact your regional NPRI office immediately**. A brief summary of the NPRI report is printed as part of the Statement of Certification. It lists the reporting facilities, their substances and the total quantities of substances released on site and/or transferred off site for disposal or recycling.

The NPRI report submitted to Environment Canada must include a Statement of Certification signed by an official of the company. Normally, the company official is the person identified in field A16.0. This person must have delegated powers to accept legal responsibility for the information provided. Some facilities may choose a CEO, the environmental coordinator or the plant manager. The person who signs this statement acknowledges that:

- he/she has reviewed the documents
- he/she has exercised due diligence to ensure that the information is true and complete, and
- the amounts and values are accurate, based on reasonable estimates using available data.

The name of the company official will not appear in the public database.

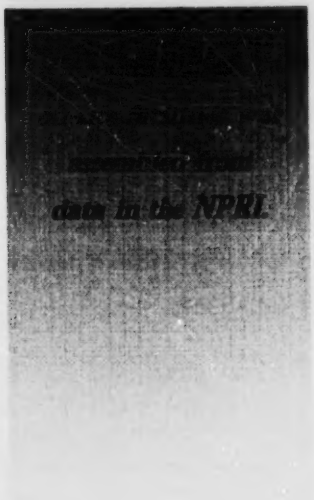
A17.0 Company Official Address

If the mailing address for the company official contact is different from the facility's site address (A2.0), complete this field as described in A5.0.

This is the end of the first section of the reporting form. You have the options of saving the facility information, cancelling the changes or returning to the facility report.

Return to the "View/Enter/Edit Data" menu. From this menu you can:

- report on NPRI substances
- identify surface water bodies to which NPRI substances are discharged, or
- identify off-site facilities to which you transfer NPRI substances for disposal or recycling.



Surface Water Bodies

If you are reporting the release of an NPRI substance to surface waters (streams, rivers, lakes, bays, inlets, etc.), you must identify the receiving water body. To ensure that water bodies are consistently identified, a list of names was assembled from data in the NPRI and from the *Gazetteer of Canada*. The names in this initial list cannot be modified. However, if you cannot find the name of a water body, you can add a new geographic feature to the list. From the "Main Menu" of the NPRI reporting software, select "View/Enter/Edit Data" and choose "Surface Water Bodies". This opens the "Master Pick-list of Surface Water Bodies" table. The water body names in this table are used in a pick-list in field B12.3 when reporting releases to surface waters.

Do not add a new surface water body name unless it will be associated with at least one discharge to surface waters identified in field B12.3, otherwise the software will generate an "orphan water body" error. There are two ways to edit the "Master Pick-list of Surface Water Bodies" table:

- select "Surface Water Bodies" in the "View/Enter/Edit Data" menu, or
- select the button in the "# of Water Bodies" column in field B12.3, then select "Add a new water body to the pick-list".

Once you have added a water body, you are required to report the quantity of the substance released to that water body.

Off-site Facilities and MSTPs

The NPRI identifies three different types of off-site facilities:

- facilities to which the reported substance is sent for final disposal or treatment prior to final disposal
- municipal sewage treatment plants (MSTPs) to which your facility discharges an **effluent** containing the reported substance, and
- facilities to which **materials** containing the reported substance are sent for **recycling**.

Discharges to sanitary sewers are reported as off-site transfers for disposal to an MSTP, regardless of the type or level of treatment offered at the MSTP.

If your facility transfers an NPRI substance off site for disposal or recycling, you must identify the receiving facility. To ensure that off-site facilities are consistently identified, a list of facilities was assembled from data in the NPRI. The information for the off-site facilities in this initial list cannot be modified. However, you can add a new off-site facility to the list if you cannot find the name of the facility to which you transferred NPRI substances. From the "Main Menu" of the NPRI reporting software, select "View/Enter/Edit Data" and choose "Off-site Facilities". Enter the name and address of the site(s) in the "Master Pick-list of Off-site Facilities" table. The off-site facilities in this table will be used in a pick-list in fields B22.1 and B25.1 to identify each site without having to re-enter the full name and location of the facility.

Do not identify an off-site facility unless it will be associated with at least one substance transfer, otherwise the software will generate an "orphan facility" error. There are two ways to edit the "Facility Off-site and MSTP Listing" table:

- select "Off-site Facilities" in the "View/Enter/Edit Data" menu, or
- select the button in the "# of Off-sites" column in field B22.1 or field B25.1 and then "Add an off-site facility to the pick-list".

Once you have added an off-site facility, you are required to report the quantity of the substance transferred to that facility.

tonnes. The units of measure depend upon the substance being reported.

Substance Information

The most important change for the 2000 reporting year has been the addition to the NPRI of substances with alternate reporting thresholds. The reporting criteria for substances with alternate reporting thresholds are explained fully in a companion document, *Supplementary Guide for Reporting to the National Pollutant Release Inventory – Alternate Thresholds – 2000*. The *Supplementary Guide* discusses in detail the reporting criteria for mercury (and its compounds), polycyclic aromatic hydrocarbons (PAHs), dioxins/furans and hexachlorobenzene (HCB). **Both this *Guide* and the *Supplementary Guide* should be consulted by owners and operators of facilities to determine if they must report on any NPRI substances.**

To add or modify a substance report, choose "Substances" from the "View/Enter/Edit Data" menu. A substance report consists of the following sections:

- Section B1 Substance Information
- Section B10 On-site Releases to the Environment
- Section B20 Off-site Transfers for Disposal or Recycling
- Section B30 Pollution-Prevention Activities
- Section B40 Production Ratio and Activity Index

Quantity Codes

Quantity codes are no longer available for reporting quantities of less than one tonne. When data is uploaded from a 1999 report, the electronic form will automatically enter the midpoint of the chosen range into the quantity column. For example, if the quantity code "B" was used in the 1999 report, the range 0.2 to < 0.4 tonnes will be replaced by the quantity 0.3 tonnes.

Units of Measure

The units of measure depend upon the substance being reported. Generally, release, disposal and recycling quantities are reported in tonnes. However, for substances with alternate reporting thresholds, these quantities are reported in kilograms or grams. The software determines what units will be used once a substance has been selected. Field B1.3 displays the units of measure. The reporting software also displays the units of measure on screens where quantity data is requested.

SCHEDULE/PART	SUBSTANCE	UNITS
Schedule 1, Part 1	Substances	tonnes
Schedule 1, Part 2	Mercury (and its compounds)	kilograms
Schedule 1, Part 3	Polycyclic aromatic hydrocarbons (PAHs)	kilograms
Schedule 1, Part 4	Hexachlorobenzene (HCB)	grams
Schedule 1, Part 4	Dioxins/furans	grams (TEQ)

"Basis of Estimate" Codes

The "Basis of Estimate" codes provide information about how you determined the quantity of an NPRI substance that was released on site or transferred off site for disposal or recycling. There are four methods for estimating releases and transfers, listed below in declining order of expected accuracy. Reference documents that may assist you with your estimates are listed in the Bibliography and examples of each estimation method are given in Appendix 7 of this *Guide* and in Chapter 7 of the *Supplementary Guide*.

M **Monitoring or direct measurement** – This is the most accurate estimation method. An example is monthly monitoring of a substance in a waste stream and the volume flow rate of that stream. If you are reporting for dioxins/furans or HCB, the "Detail" codes field will be enabled (see below).

C **Mass balance** – A mass balance is an accounting of the quantity of a substance going in and out of an entire facility, process or piece of equipment. Releases can be calculated as the difference between input and output.

E **Emission factors** – An emission factor is based on average measured emissions from several similar processes. Emission factors usually express releases as a ratio of quantity released to process or equipment throughput.

O **Engineering estimates** – This estimation method is based on physical/chemical properties (e.g., vapour pressure) of the substance and mathematical relationships (e.g., ideal gas law).

NA **Not applicable** – This indicates that there are no releases or transfers from your facility to this medium.

NI **No information available** – This is a new code that was added for 2000 only for dioxins/furans and HCB. Select this code only if your facility met the reporting criteria for dioxins/furans or HCB, but you have no information available on which to base an estimate of the quantity released or transferred.

The reporting software has a pick-list for choosing the "Basis of Estimate" codes. Select the letter code identifying the method that applies to the largest portion of the estimated releases or transfers.

Dioxins/Furans and HCB

The reporting requirements for dioxins/furans and HCB differ greatly from those for other substances in the NPRI. Refer to the *Supplementary Guide* for details. An NPRI substance report for dioxins/furans or HCB will indicate:

- the quantity released on site or transferred off site as the result of **incidental manufacture** from prescribed activities
- the quantity released on site or transferred off site resulting from **wood preservation using pentachlorophenol**
- **for direct measurements only**, that the measured concentrations were above, equal to or below the Level of Quantification (LoQ)
- that there were no releases to a specific medium or no transfers off site, or
- that **no information** was available on which to base an estimate.

Level of Quantification (LoQ)

The level of quantification is defined in Section 65 of the *CEPA* (1999) as "the lowest concentration that can be accurately measured using sensitive but routine sampling and analytical methods". Environment Canada determines LoQ values by carrying out statistical analyses of several sets of measurements from a variety of emission sources. The LoQ is calculated as 10 times the standard deviation of replicated measurements. For some media and some analytical methods, the detection limit may be lower than the LoQ recommended by Environment Canada. Table 8 in the *Supplementary Guide* lists the LoQ for dioxins/furans and HCB for three types of material or waste streams that may be released on site or transferred off site – gaseous, liquid and solid. The LoQ values listed include both final, draft and estimated values published by Environment Canada. In the reporting software, the "Detail" code is used to indicate if your measured concentrations were above, equal to or below the LoQ for each type of material that you released on site or transferred off site.

Quantification is the lowest concentration that can be accurately measured using sensitive but routine sampling and analytical methods.

"Detail" Codes

"Detail" codes are required and are available only for dioxins/furans and HCB substance reports. A "Detail" code is required only if the release, disposal or recycling data were obtained through direct measurement or monitoring (code "M" in the "Basis of Estimate" field). The "Detail" code is used to indicate if your measured concentrations are above, equal to or below the LoQ. The "Detail" code field is adjacent to the "Basis of Estimate" field. Three "Detail" codes are available:

AL **At or Above LoQ – The measured concentration was equal to or greater than the LoQ –** If chosen, you must enter the quantity of the substance that was released on site or transferred off site for disposal or recycling.

BL **Below LoQ (no quantity entered) – The measured concentration was below the LoQ –** This indicates that the substance may have been present but you did not quantify the amount that was released on site or transferred off site for disposal or recycling.

BQ **Below LoQ (quantity entered) – The measured concentration was below the LoQ –** If chosen, this indicates that you have opted to report the quantity of the substance that was released on site or transferred off site for disposal or recycling based on a measured concentration that was less than Environment Canada's LoQ.

How to Report Releases and Transfers of Dioxins/Furans and HCB

The use of "Basis of Estimate" and "Detail" codes is summarized below. More information on completing an NPRI report for dioxins/furans and HCB is provided in the *Supplementary Guide*.

BASIS OF ESTIMATE CODE	DETAIL CODE	QUANTITY FIELD
Monitoring or Direct Measurement (Code M)	**At or Above LoQ** (Code AL)	you must enter **quantity** released or transferred
Monitoring or Direct Measurement (Code M)	**Below LoQ (no quantity entered)** (Code BL)	*not applicable*
Monitoring or Direct Measurement (Code M)	**Below LoQ (quantity entered)** (Code BQ)	you must enter **quantity** released or transferred
Mass Balance (Code C)	*not applicable*	you must enter **quantity** released or transferred
Emission Factors (Code E)	*not applicable*	you must enter **quantity** released or transferred
Engineering Estimate (Code O)	*not applicable*	you must enter **quantity** released or transferred
No Information Available (Code NI)	*not applicable*	*not applicable*
Not Applicable (Code NA)	*not applicable*	*not applicable*

B1.0 Substance Identity

Enter the name of the NPRI substance and its CAS number. The reporting software provides pick-lists for the NPRI substances and their CAS numbers. Appendix 1 lists the NPRI substances alphabetically and Appendix 2 lists the NPRI substances by CAS number.

Report only NPRI substances. For example, if you use silver nitrate, do not report silver nitrate with its corresponding CAS number because the NPRI does not list silver nitrate as an individual compound. Report this substance as "silver (and its compounds)". The reporting software will only accept the names and the CAS numbers of substances on the NPRI list.

The NPRI reporting form can be used to complete reports for the National Emissions Reduction Masterplan (NERM) of the Canadian Chemical Producers' Association and for the Accelerated Reduction/Elimination of Toxics (ARET) program of Environment Canada. From the "Main Menu", choose "Report Additional Substances" to enable reporting of substances on the NERM and ARET lists. The pick-lists in field B1.0 will include the NERM and ARET substances in addition to the NPRI substances. Field B1.4 will show if the substance is an NPRI, NERM or ARET substance.

B1.1 CAS Registry Number

Enter the CAS number of the NPRI substance you are reporting. A pick-list of NPRI substances, listed numerically by CAS number, is available. Once the CAS number is identified and selected in the pick-list, the program will automatically place the CAS number in field B1.1 **and** the substance name in field B1.2. Some NPRI substances, such as "ammonia (total)" or "(element) and its compounds", do not have unique CAS numbers and are identified by "NA" on the pick-list. Indicators next to the CAS number will show if the substance is an acid, a PAH, a dioxin/furan or HCB.

B1.2 Substance Name

If you do not know the CAS number of the substance you are reporting, you can choose from a pick-list of substance names. The CAS number will automatically be inserted into field B1.1. The program will enter "NA" in the CAS number field for groups of NPRI substances which do not have unique CAS numbers, such as "zinc (and its compounds)".

B1.3 Units of Measure

This field displays the units of measure. The units of measure will also be displayed wherever quantity data is reported (e.g., when entering on-site releases or anticipated disposals). The software determines what units will be used once a substance has been selected.

B1.4 This Substance is on the Following Program List(s)

Indicators will show if the substance is on the NPRI, NERM or ARET list.

B2.0 Nature of Activities

Indicate whether the NPRI substance was manufactured, processed or otherwise used, and the nature of such activities at the facility during the calendar year. For each substance, you may identify more than one activity.

B2.1 Manufacture the Substance

The term "manufacture" means to *produce, prepare or compound* an NPRI substance. This also includes the incidental production of an NPRI substance as a by-product as the result of the manufacture, processing, other use or treatment of other substances, products or materials. For example, certain NPRI substances may be manufactured as a result of wastewater treatment or other treatment processes.

Example of Manufacturing Activity
Your facility purchased chlorine and reacted it with sodium chlorite to form chlorine dioxide. Therefore, your company *processed* chlorine and *manufactured* chlorine dioxide. Both are NPRI substances. You are required to report both substances if you met the reporting criteria. Refer to "Calculating the 10-tonne Reporting Threshold" in Section 2.

Example of Incidental Manufacturing of By-products
Your facility manufactured aluminum. During the smelting process, hydrogen fluoride (HF) was released. The concentration of HF is 2 ppm but the quantity exceeded 10 tonnes per year. You are required to report your releases of HF because it was *produced as a by-product* and not subject to the 1% concentration criterion. You are not required to report solid aluminum because it is not an NPRI substance. You may have to report "aluminum (fume or dust)", as well as other NPRI substances, if all other reporting criteria are met. Refer to "Calculating the 10-tonne Reporting Threshold" in Section 2.

If you manufactured the substance being reported, select at least one of the categories that follow:

B2.1.a **For on-site use/processing** – The substance was manufactured and then further processed or used at the same facility.

B2.1.b **For sale/distribution** – The substance was manufactured specifically for sale or distribution outside the facility. For example, a mine mill processed metal ore on site to manufacture ore concentrates, and then sold the metal concentrate(s) outside the facility.

B2.1.c **As a by-product** – The substance was produced incidentally and released to the environment or transferred off site for disposal. See Section 2 for a complete discussion of NPRI by-products.

B2.1.d **As an impurity** – The substance was produced incidentally and remained in the product destined to be distributed in commerce.

B2.2 Process the Substance

The term "process" means the *preparation* of a listed substance, after its manufacture, for distribution in commerce, or the *use* of a listed substance as part of a chemical or physical process. Processing includes the preparation of a substance **with or without change** in physical or chemical form. The term also applies to the processing of materials, mixtures or formulations that contain a listed substance as one component. During processing, the substance is generally not separated from the product.

If your facility processed the substance, select at least one of the following:

B2.2.a **As a reactant** – An NPRI substance used in chemical reactions for the manufacture or processing of another substance or product. This includes, but is not limited to, feedstock, raw materials, intermediates, catalysts and nutrients added to wastewater treatment systems.

B2.2.b **As a formulation component** – A substance added to a product (or product mixture) before further distribution of the product. Examples of substances used in this capacity include, but are not limited to, additives, dyes, reaction diluents, initiators, solvents, inhibitors, emulsifiers, surfactants, lubricants, flame retardants and rheological modifiers.

B2.2.c **As an article component** – A substance that became an integral component of an article distributed for industrial, trade or consumer use. An example is ethylene glycol added to vehicle radiators during assembly.

B2.2.d Repackaging only – Processing or preparation of a substance (or product mixture) for distribution in commerce. This also includes transferring NPRI substances to or from bulk containers.

B2.2.e As a by-product – The NPRI substance was incidentally processed and was released to the environment or was transferred off site for disposal. See Section 2 for a complete discussion of NPRI by-products

B2.3 Otherwise Use the Substance

"Otherwise use" encompasses any use of an NPRI substance that is relevant to the purposes of the facility that does not fall under the definitions of "manufacture" or "process". As an example, your facility cleaned equipment with a listed solvent; it *otherwise used* the substance (ancillary or other use). Note that such an activity is not considered "routine janitorial" or "facility grounds" maintenance.

If your facility otherwise used the substance, select at least one of the following:

B2.3.a As a physical or chemical processing aid – A substance that was added to a reaction mixture to aid in the manufacture or synthesis of another substance but was not intended to remain in or become part of the product or product mixture. Examples of such substances include, but are not limited to, process solvents, catalysts, inhibitors, initiators, reaction terminators and buffers.

B2.3.b As a manufacturing aid – A substance that aided the manufacturing process but did not become part of the resulting product and was not added to the reaction mixture during the manufacture or synthesis of another substance. Examples include process lubricants, metal-working fluids, coolants, refrigerants and hydraulic fluids.

B2.3.c Ancillary or other use – A substance in this category that was used at a facility for purposes other than as a chemical processing aid or manufacturing aid. This includes, but is not limited to, equipment cleaners, degreasers, fuels, flocculants and substances used for treating wastes.

B2.3.d As a by-product – The NPRI substance was incidentally present in a material that was otherwise used at the facility and released to the environment or transferred off site for disposal. See Section 2 for a complete discussion of NPRI by-products.

On-site Releases to the Environment

If the reporting criteria are met for an NPRI substance, then **all** releases of that substance must be reported **regardless of the concentration or amount.**

B10.0 Do You Release This Substance On Site?

To report the on-site releases of an NPRI substance, select "Yes" in field B10.1. If you select "No", the program brings you automatically to field B14.0 "Reasons for Changes in Quantities Released from Previous Year".

B11.0 Releases of Less than One Tonne

If the total of all your releases of an NPRI Part 1 substance to all media was less than one tonne, you have the option of reporting releases by environmental medium (B12.1 to B12.4 for releases to air, water, land and underground injection) or reporting only the total release to all media (B12.5). To report total releases to all media of less than one tonne of a substance, select "Yes" in field B11.1. This field is enabled only for NPRI Part 1 substances. The program will proceed directly to field B12.5 "Total Releases". Otherwise, select "No" and enter specific releases to each environmental medium.

B12.0 On-site Releases of the Substance to the Environment

If your releases were greater than one tonne, you must account for total releases of the substance from your facility to each environmental medium (air, water, land and underground injection). **Report the "net" release of the substance, not the total release of a mixture containing the substance.**

Some NPRI substances are listed as "(element) and its compounds". For these substances, report only the total amount of the element in the compounds released rather than the total amount of the compounds that contain the element. Total releases (B12.5) from your facility do not include transfers of the substance to off-site locations for disposal or recycling.

For each release by medium, enter a "Basis of Estimate" code. Selecting "NA" (Not applicable) indicates that there were no releases from your facility to this medium. Enter the letter code identifying the estimation method that applies to the largest portion of the releases. A pick-list is available for choosing the "Basis of Estimate" codes.

"Detail" codes are required and available only for dioxins/furans and HCB substance reports. A "Detail" code is required only if the release, disposal or recycling data were obtained through direct measurement or monitoring (code "M" in the "Basis of Estimate" field). The "Detail" code is used to indicate if your measured concentrations were above, equal to or below the LoQ.

Units of Measure

The units of measure depend upon the substance being reported. Generally, release, disposal and recycling quantities are reported in tonnes. However, for substances with alternate reporting thresholds, these quantities are reported in kilograms or grams. The software determines what units will be used once a substance has been selected.

SUBSTANCE	UNITS
Schedule 1, Part 1 Substances	tonnes
Mercury (and its compounds)	kilograms
Polycyclic aromatic compounds (PAHs)	kilograms
Hexachlorobenzene (HCB)	grams
Dioxins/furans	grams (TEQ)

MSTP are considered off-site transfers for disposal and not direct discharges to surface waters.

B12.1 Air Releases

Report all air emissions of the NPRI substance, the basis of the estimate and the detail code, if applicable. Both routine releases, such as fugitive releases to air, and accidental or non-routine releases, such as a relief valve opening due to process upset, should be included in your estimate of the quantity released.

B12.1.a Stack or point releases – Total releases from stack or point sources including stacks, vents, ducts, pipes or other confined process streams. Releases to air from pollution-control equipment generally fall into this category.

B12.1.b Storage or handling releases – The quantity of releases to air from storage or handling of a listed substance should be entered in this field.

B12.1.c Fugitive releases – Fugitive releases are the total of all releases to air that are not released through confined process streams. These releases include:

- fugitive equipment leaks from valves, pump seals, flanges, compressors, sampling connections, open-ended lines, etc.
- evaporative losses from surface impoundments and spills
- releases from building ventilation systems, and
- any other fugitive or non-point air emissions from land treatment, mine tailings, storage piles, etc.

B12.1.d Spills – Any accidental releases to air that do not qualify as point or non-point air releases should be entered in this field.

B12.1.e Other non-point releases – Any other non-point air releases not estimated in one of the above air-related release types should be entered in this field.

B12.2 Underground Injection

Report the quantity of the NPRI substance injected on site, the basis of the estimate and the detail code, if applicable.

B12.3 Releases to Surface Waters

Report all releases of the NPRI substance to surface waters, the basis of the estimate and the detail code, if applicable.

B12.3.a Direct discharges – Direct discharges do not include discharges to an MSTP or other off-site wastewater treatment facilities. These discharges are considered off-site transfers for disposal which are reported in field B22.1.f.

B12.3.b Spills – Spills into surface waters include any accidental releases which may have occurred at your facility.

B12.3.c Leaks – A leak to surface waters differs from a spill in terms of the time required for an event. Spills normally occur over a period of hours or days, whereas a leak is a chronic event which occurs over periods of days or months.

For each surface water discharge, you must identify the receiving water bodies. The button in the "# of Water Bodies" column shows the number of water bodies receiving the discharge. It displays a "?" if no water bodies have been identified. Select the button to open the "Master Pick-list of Surface Water Bodies" table. Here you can identify the surface water bodies that received the discharge, as well as the quantity discharged to each surface water body. The software provides a pick-list of standard water body names that is drawn from the NPRI database and the *Gazetteer of Canada*. The pick-list is sorted by province.

You may add the names of new surface water bodies to the pick-list if it is incomplete. There are two ways to edit the pick-list of surface water body names:

- select "Surface Water Bodies" in the "View/Enter/Edit Data" menu, or
- select the button in the "# of Water Bodies" column in field B12.3, then select "Add a new water body to the pick-list".

If your total discharge to all media was less than one tonne, you are not required to report your releases by environmental media and may report only a total discharge. Do not include water bodies that receive the general plant waste stream if this waste stream did not contain an NPRI substance or if reportable acids in the waste stream have been neutralized to a pH of 6.0 or greater prior to release.

B12.4 Releases to Land

Report all releases of the NPRI substance to land **within** the boundaries of your facility, the basis of the estimate and the detail code, if applicable. Do not report land disposal at an off-site location in this field. Transfers of the substance for disposal are reported in B20.0.

B12.4.a Landfill – For the purposes of the NPRI, on-site landfilling is classified as a release. If the substance was transferred off site for disposal, enter the quantity in field B22.1.e-i) "Containment/Landfill".

B12.4.b Land treatment – Land treatment is a disposal method in which a waste containing a listed substance is applied onto or incorporated into soil. If the substance is transferred off site for disposal, enter the quantity in field B22.1.h "Land Treatment".

B12.4.c Spills – Releases classified as spills include any accidental release of a listed substance to land at your facility.

B12.4.d Leaks – Leaks differ from spills in that they are chronic events that occur over a comparatively long time. This includes leaking underground storage tanks.

B12.4.e Other – Releases to land could occur in forms other than those already specified above, for example, encapsulation prior to on-site landfill.

B12.5 Total Quantity Released

The electronic form will calculate the sum of the on-site releases reported in fields B12.1 through B12.4 and place this total into field B12.5. If you chose to report only a total release of less than one tonne to all media for **an NPRI Part 1 substance only** (B11.1), enter the quantity, the basis of the estimate and the detail code, if applicable.

B13.0 Yearly Breakdown of Releases by Percentage in Each Quarter

This field is intended for facilities that have seasonal fluctuations in their releases. Releases for the four quarters must total 100%.

B14.0 Reasons for Changes in Quantities Released from Previous Year

Select one or more reasons why the on-site releases of the NPRI substance changed since 1999. This section must be completed, even if there were no on-site releases. You may use the "Comments" field to elaborate on your reasons. If this is your first reporting year, select B14.1.i "Not applicable". Some of the reasons for change may also be considered as pollution-prevention activities. If you have selected B14.1.c "Pollution-prevention activities", you must also complete Section B30.0 – "Pollution-Prevention Activities".

B14.1.a Changes in production levels – A change in on-site releases may be the result of changes in production levels or some other activity at the facility. Changes in production levels can be caused by increased sales, a change in the economy affecting the facility, a strike or other plant closure, expansion or conversion of the facility, etc. Other examples are given in Section B40.0 – "Production Ratio and Activity Index", which provides you the opportunity to provide a quantitative measure of the year-to-year fluctuations in production levels and on-site releases.

B14.1.b Changes in estimation methods – Choose this item if there was a change in the method of estimating the quantity of the NPRI substance transferred off site. For example, engineering estimates may have been replaced by direct measurement. Or, the engineering calculations were updated or corrected.

B14.1.c Pollution-prevention activities – If chosen, you must describe the pollution-prevention activities in Section B30.0. Refer to that section for examples of pollution-prevention activities. Pollution prevention does not include on-site treatment (pollution control) or off-site recycling or disposal.

B14.1.d Changes in on-site treatment – Examples include modification to or addition of new pollution-control devices, redirection or elimination of waste streams, expanded on-site recycling and other changes in on-site waste treatment.

B14.1.e Changes in off-site transfers for disposal – If chosen, you must report the off-site transfers for disposal in fields B20.0, B21.0, B22.0, B23.0 and B24.0.

B14.1.f Changes in off-site transfers for recycling – If chosen, you must report the off-site transfers for recycling in fields B20.0, B21.0, B25.0, B26.0 and B27.0.

B14.1.g Other – Some examples include accidents, spills or breakdowns. Provide details in field B14.2 "Comments".

B14.1.h No significant change or no change – Choose this item if there has been no change or if the change was less than 10% from the previous year.

B14.1.i Not applicable – Choose this item if this is the first year you are reporting this substance.

B14.2 Comments (Releases)

Comments specific to the releases of this substance may be provided in this field. For example, provide details of a spill which dramatically affected the release of this substance. The comments will appear in the NPRI database available to the public and are an opportunity to provide context for the information reported to the NPRI.

B15.0 Anticipated Releases

Enter your estimates of total releases to all environmental media, for the years 2001, 2002 and 2003. Estimates for the years 2004 and 2005 are optional (select "Not applicable"). Factors that should be considered when making these estimates include future production levels, product or process changes, pollution-prevention measures, addition of pollution-control equipment, etc.

Off-site Transfers for Disposal or Recycling

Disposal and recycling activities are considered together under the common heading of off-site transfers. The reporting categories are based on the International Waste Identification Code (IWIC) (Environment Canada, 1993) developed by the Organization for Economic Cooperation and Development (OECD). Reporting is limited to those categories which are most applicable to NPRI reporters. People who report under the *Export and Import of Hazardous Wastes Regulations (EIHWR)* (*Canada Gazette*, 1992) will immediately recognize the format. Even if you do not handle hazardous wastes, the reporting format will enable you to describe your transfers more accurately.

"Disposal" is final disposal of the material (e.g., landfill) or storage and treatment (e.g., stabilization) prior to final disposal. "Recycling" refers to activities that keep a material or a component of the material from becoming a waste destined for final disposal. Recyclable materials may be reprocessed to their original specifications and reused for their original purpose or used for an entirely different purpose. Components may be recovered from the recyclable material or the material may be used as a fuel for energy recovery. The recyclable material may be used in the manufacture of another product. For the purposes of the NPRI, recycling also includes substances sent back to the manufacturer or supplier for reprocessing, repackaging, resale or for credit or payment.

B20.0 Transfers of the Substance to Off-site Locations

Indicate if you transferred the NPRI substance to off-site locations for disposal or recycling by selecting either "Yes" or "No" in fields B20.1 and B20.2, respectively. Depending on your selection, the software will automatically skip certain sections of the report. However, even if you did not transfer NPRI substances off site, you must still provide reasons for changes in quantities disposed/recycled and anticipated transfers for disposal/recycling (B23.0, B24.0, B26.0 and B27.0). You will also be able to provide comments on your transfers for disposal and your recycling activities in fields B23.2 and B26.2.

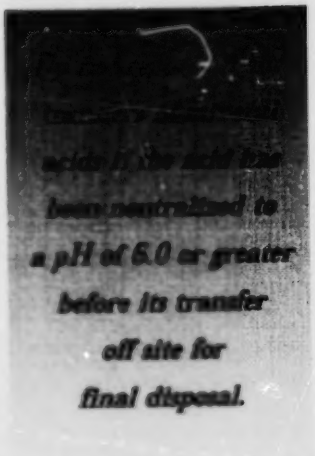
B21.0 Reasons why Substances were Transferred Off Site for Disposal or Recycling

Select one or more reasons why the NPRI substance or why a material containing the NPRI substance was transferred off site for disposal or recycling. **This category does not include on-site disposal or recycling.** For convenience, the equivalent IWIC Q-codes are listed in brackets after each item. Choose one or more of the following reasons:

B21.1.a Production residues – These are, for example, residues of industrial processes such as slags and still bottoms, residues from raw material processing such as mining residues and oil field slop. [Corresponds to codes Q1, Q8 and Q11 in the IWIC]

B21.1.b Off-specification products – These are products that were not suitable for commercial distribution or that could not be used by the facility and were destined for final disposal, reuse or recycling by another facility. [Corresponds to code Q2 in the IWIC]

B21.1.c Expiration date passed – Products for which the date for appropriate use expired and that were transferred off site for final disposal or reuse or recycling by another facility. [Corresponds to code Q3 in the IWIC]



B21.1.d Contaminated materials – For example, materials spilled or having undergone other mishap, including any materials contaminated as a result of the mishap; materials contaminated or soiled as a result of planned actions such as residues from cleaning operations, packing materials, containers, etc.; contaminated substances that no longer performed satisfactorily such as contaminated acids, solvents, exhausted tempering salts, etc.; adulterated materials. [Corresponds to codes Q4, Q5, Q7 and Q12 in the IWIC]

B21.1.e Unusable parts or discards – Describes items such as reject batteries, exhausted catalysts, etc. [Corresponds to code Q6 in the IWIC]

B21.1.f Pollution-abatement residues – Materials such as scrubber sludges, baghouse dusts, spent filters, etc., generated by pollution controls and on-site waste treatment. [Corresponds to code Q9 in the IWIC]

B21.1.g Machining or finishing residues – This includes lathe turnings, grinding dusts, sheet metal cuttings, mill scales, etc. [Corresponds to code Q10 in the IWIC]

B21.1.h Site-remediation residues – Materials, substances or products resulting from remedial actions with respect to contaminated land. [Corresponds to code Q15 in the IWIC]

B21.1.i Other – Any materials, substances or products not described above.

B22.0 Off-site Transfers for Disposal

In this field, report the quantity of the NPRI substance transferred to off-site locations for final disposal or storage and treatment prior to final disposal. If the reporting criteria are met for a listed substance, **all** off-site transfers of that substance for disposal must be reported **regardless of the concentration or amount**. Report the quantity of the NPRI substance that was sent to an off-site treatment facility and not the total weight of the mixture containing that substance. Report transfers to the first off-site location only and identify its name and location. You are not required to report any subsequent transfers by the waste disposal company. However, you must report the disposal method used. Disposal includes storage and treatment (e.g., stabilization) prior to final disposal. Do not report materials containing the NPRI substance which were recycled off site; they are reported in field B25.0.

Do not report off-site transfers of mineral acids if the acid had been neutralized to a pH of 6.0 or greater *prior to* its transfer off site for final disposal. In the case of nitric acid, the quantity of neutralized nitric acid would be reported as "nitrate ion in solution at a pH of 6.0 or greater".

For each disposal activity chosen, enter a "Basis of Estimate" code. Selecting "NA" (Not applicable) indicates that there were no transfers from your facility for this disposal activity. Enter the letter code identifying the method that applies to the largest portion of the estimated transfers. A pick-list is available in each field for choosing the "Basis of Estimate" codes.

"Detail" codes are required and available only for dioxins/furans and HCB substance reports. A "Detail" code is required only if the release, disposal or recycling data were obtained through direct measurement or monitoring (code "M" in the "Basis of Estimate" field). The "Detail" code is used to indicate if your measured concentrations were above, equal to or below the LoQ.

Units of Measure

The units of measure depend upon the substance being reported. Generally, release, disposal and recycling quantities are reported in tonnes. However, for substances with alternate reporting thresholds, these quantities are reported in kilograms or grams. The software determines what units will be used once a substance has been selected.

SUBSTANCE	UNITS
Schedule 1, Part 1 Substances	tonnes
Mercury (and its compounds)	kilograms
Polycyclic aromatic compounds (PAHs)	kilograms
Hexachlorobenzene (HCB)	grams
Dioxins/furans	grams (TEQ)

B22.1 Disposal Method

Eight major off-site disposal methods are identified. Report the exact amounts of the NPRI substance transferred for that disposal method, the basis of the estimate and the detail code, if applicable. Facilities can obtain information about the ultimate treatment/disposal of their transfers by looking at their invoices, waybills, waste manifests or by contacting the transfer facility.

B22.1.a Physical treatment – e.g., drying, evaporation, encapsulation or vitrification.

B22.1.b Chemical treatment – e.g., precipitation, stabilization or neutralization.

B22.1.c Biological treatment – e.g., bio-oxidation or composting.

B22.1.d Incineration/thermal – This differs from energy recovery. Incineration occurs when the substance or the material containing the substance does not have sufficient fuel value to contribute toward energy recovery.

B22.1.e Containment – Two forms of containment are identified:

i) landfill

ii) other storage

B22.1.f Municipal Sewage Treatment Plant (MSTP) – Report discharges of the NPRI substance to a municipal sewer system, regardless of the level of treatment provided by the MSTP.

B22.1.g Underground injection – Report quantity injected underground at an off-site location.

B22.1.h Land treatment – Report the quantity transferred off site for the purpose of land application or land farming.

You must identify the off-site facilities which received the NPRI substance for disposal. If the transfer was split among several off-site facilities, specify the quantity of the NPRI substance that was transferred to each facility. Select the button in the "# of Off-sites" column to open the "Master Pick-list of Off-site Facilities" table. The software provides a pick-list of previously-identified, off-site facilities. The pick-list can be edited if it is incomplete or inaccurate. The pick-list of off-site facilities and MSTPs is based on the information provided in the table "Master Pick-list of Off-site Facilities". There are two ways to edit the table:

- select "Off-site Facilities" in the "View/Enter/Edit Data" menu, or
- select the button in the "# of Off-sites" column in field B22.1 or field B25.1 and then "Add an off-site facility to the pick-list".

B22.2 Total Quantity Disposed

The reporting software calculates the sum of the entries made in field B22.1 and places the result into this field.

B23.0 Reasons for Changes in Quantities Disposed from Previous Year

Select one or more reasons why off-site transfers for disposal of the NPRI substance have changed since 1999. This section must be completed, even if there were no off-site transfers. You may use the "Comments" field to elaborate on your reasons. If this is your first reporting year, select B23.1.i for "Not applicable". Some of the reasons for change may also be considered as pollution-prevention activities. If you have selected B23.1.c "Pollution-prevention activities", you must also complete Section B30.0 – "Pollution-Prevention Activities". The reasons for changes include:

B23.1.a Changes in production levels – A change in off-site transfers for disposal may be the result of changes in production levels or some other activity at the facility. Changes in production levels can be caused by increased sales, a change in the economy affecting the facility, a strike or other plant closure, expansion or conversion of the facility. Other examples are given in Section B40.0 – "Production Ratio and Activity Index," where you have the opportunity to provide a quantitative measure of the year-to-year fluctuations in production levels and off-site transfers.

B23.1.b Changes in estimation methods – Choose this item if there was a change in the method of estimating the quantity of the NPRI substance transferred off site. For example, engineering estimates may have been replaced by direct measurement or the engineering calculations may have been updated or corrected.

B23.1.c Pollution-prevention activities – If chosen, you must describe the pollution-prevention activities in Section B30.0. Refer to that section for examples of pollution-prevention activities. Pollution prevention does not include on-site treatment (pollution control) or off-site recycling or disposal.

B23.1.d Changes in on-site treatment – Examples include modification or addition of new pollution-control devices, redirection or elimination of waste streams, expanded on-site recycling and other changes in on-site waste treatment.

B23.1.f Changes in off-site transfers for recycling – If chosen, you must report the off-site transfers for recycling in fields B20.0, B21.0, B25.0, B26.0 and B27.0.

B23.1.g Other – Some examples include site remediation, accidents, spills or breakdowns which affect the quantity of the NPRI substance transferred off site for disposal. Provide details in field B23.2 "Comments".

B23.1.h No significant change or no change – Choose this item if there has been no change or if the change was less than 10% from the previous year.

B23.1.i Not applicable – Choose this item if this is the first year reporting this substance.

B23.2 Comments (Disposal)

Comments specific to the off-site disposal of this substance may be provided in this section. For example, give details of a one-time site remediation which dramatically affected the off-site transfers of this substance. The comments will appear in the NPRI database available to the public and are an opportunity to provide context for the information reported to the NPRI.

Report only the net weight of the NPRI substance transferred off site for recycling, and not the total amount of the mixture containing the substance.

B24.0 Anticipated Disposals

Enter your estimate of total transfers of the listed substance for disposal to off-site facilities for the years 2001, 2002 and 2003. Years 2004 and 2005 are optional fields (select "Not applicable"). Factors that should be considered when making these estimates include future production levels, product or process changes, pollution-prevention measures, addition of pollution-control equipment, site remediations, etc. This section must be completed, even if there were no off-site transfers.

B25.0 Off-site Transfers for Recycling

"Recycling" refers to activities that keep a material or a component of the material from becoming a waste destined for disposal. Recyclable materials may be cleaned, regenerated or reprocessed to their original specifications and reused for their original purpose. They may also be used for an entirely different purpose without any pretreatment or modification. Components may be recovered or reclaimed from the recyclable material or the material may be used as a fuel for energy recovery. The recyclable material may be used in the manufacture of another product. For the purposes of the NPRI, recycling also includes substances sent back to the manufacturer or supplier for reprocessing, repackaging, resale or for credit or payment. Report only the net weight of the NPRI substance transferred off site for recycling, and **not the total amount of the mixture containing the substance**. For example, your facility submits an NPRI report for zinc. It sends zinc-coated steel for recycling to an off-site recycler. In this case, you must report the net weight of the zinc and not the total weight of the zinc-coated steel.

Ten types of recycling operations are listed, based on those set out in Part II of Schedule III of the *Export and Import of Hazardous Wastes Regulations* and are used as part of the IWIC code to classify hazardous recyclables. Choose the recycling operation which best describes how the NPRI substance or material containing the NPRI substance was recycled. The NPRI substance is considered to be recycled even when only a portion of the material in which it is contained is recycled. This recognizes the fact that recycling may only recover certain valuable components. For example, only the valuable metals may be recovered from a wastewater treatment sludge from an electroplating operation.

For each recycling activity chosen, enter a "Basis of Estimate" code. Selecting "NA" (Not applicable) indicates that there were no transfers from your facility for this recycling activity. Enter the letter code identifying the method that applies to the largest portion of the estimated transfers. A pick-list is available in each field for choosing the "Basis of Estimate" codes.

"Detail" codes are required and available only for dioxins/furans and HCB substance reports. A "Detail" code is required only if the release, disposal or recycling data were obtained through direct measurement or monitoring (code "M" in the "Basis of Estimate" field). The "Detail" code is used to indicate if your measured concentrations were above, equal to or below the LoQ.

Units of Measure

The units of measure depend upon the substance being reported. Generally, release, disposal and recycling quantities are reported in tonnes. However, for substances with alternate reporting thresholds, these quantities are reported in kilograms or grams. The software determines what units will be used once a substance has been selected.

SUBSTANCE	UNITS
Schedule 1, Part 1 Substances	tonnes
Mercury (and its compounds)	kilograms
Polycyclic aromatic compounds (PAHs)	kilograms
Hexachlorobenzene (HCB)	grams
Dioxins/furans	grams (TEQ)

B25.1 Recycling Activity

Ten major off-site recycling activities are identified. Report the net amounts of the NPRI substance transferred for that recycling activity, the basis of the estimate and the detail code, if applicable.

B25.1.a Energy recovery – The NPRI substance or the material containing it has sufficient energy content (BTU value) to allow its use as a fuel for energy recovery. If there had been no attempt to recover energy from the material, report it as an off-site transfer for incineration. [Corresponds to code R1 in the IWIC]

B25.1.b Recovery of solvents – The recovery or regeneration of NPRI substances or materials containing NPRI substances that have been used as solvents. For example, distillation of methanol after solvent extraction to recover pure solvent methanol. [Corresponds to code R2 in the IWIC]

B25.1.c Recovery of organic substances (not solvents) – Recovery of other organic substances that are not used as solvents. [Corresponds to code R3 in the IWIC]

B25.1.d Recovery of metals and metal compounds – Choose this recycling activity when a pure metal or a metal compound was being recovered. The NPRI list of substances includes 17 metals: aluminum, antimony, cadmium, chromium, cobalt, copper, lead, manganese, mercury, molybdenum, nickel, selenium, silver, thorium, titanium, vanadium and zinc. Some are listed as "(elements) and their compounds" while others are listed as specific inorganic or qualified inorganic compounds. [Corresponds to code R4 in the IWIC]

B25.1.e Recovery of inorganic materials (not metals) – The NPRI list of substances contains the inorganic substances: ammonia, arsenic, asbestos, boron trifluoride, bromine, carbon disulphide, chlorine, chlorine dioxide, fluorine, hydrazine, hydrogen sulphide, ionic cyanides, nitrate ion, phosphorus and sulphur hexafluoride. [Corresponds to code R5 in the IWIC]

B25.1.f Recovery of acids or bases – The following mineral acids are on the NPRI list: hydrochloric acid, nitric acid, phosphoric acid and sulphuric acid. This recycling activity also applies to the recovery of acids or bases that contain other NPRI substances as contaminants. [Corresponds to code R6 in the IWIC]

B25.1.g Recovery of catalysts – Choose this item if a catalyst containing an NPRI substance was transferred off site to be recovered, reactivated, regenerated or otherwise refurbished for reuse as a catalyst. Recovery of catalysts does not include the destruction of the catalyst to recover separate components. Choose B25.1.d if the catalyst was transferred off site for recovery of the metals in the catalyst. [Corresponds to code R8 in the IWIC]

B25.1.h Recovery of pollution-abatement residues – This includes the recycling of residues from pollution controls or site-remediation activities. [Corresponds to code R7 in the IWIC]

B25.1.i Refining or reuse of used oil – Lubricating oils are not on the NPRI list of substances. However, used oils are sometimes contaminated with NPRI

substances, such as zinc additives. Choose this recycling activity if used oils containing NPRI substances were transferred off site for refining or reuse. If used oil was used as a fuel, choose B25.1.a. [Corresponds to code R9 in the IWIC]

B25.1.j Other – Other recovery, reuse and recycling activities not described above.

You must identify the off-site facilities which received the NPRI substance for recycling. If the transfer was split among several off-site facilities, specify the quantity of the NPRI substance that was transferred to each facility. Select the button in the "# of Off-sites" column to open the "Master Pick-list of Off-site Facilities" table. The software provides a pick-list of previously-identified, off-site facilities. The pick-list can be edited if it is incomplete or inaccurate. The pick-list of off-site facilities is based on the information provided in the table "Master Pick-list of Off-site Facilities". There are two ways to edit the table:

- select "Off-site Facilities" in the "View/Enter/Edit Data" menu, or
- select the button in the "# of Off-sites" column in field B22.1 or field B25.1 and then "Add an off-site facility to the pick-list".

B25.2 Total Quantity Recycled

The reporting software calculates the sum of the entries made in field B25.1 and places the result into this field.

B26.0 Reasons for Changes in Quantities Recycled from Previous Year

Indicate the changes, since 1999, in off-site transfers for recycling. This section must be completed, even if there were no off-site transfers. If this is your first reporting year, select B26.1.i for "Not applicable". Otherwise, select at least one of the following reasons for changes in quantities transferred. If you have selected B26.1.c "Pollution-prevention activities", you must complete Section B30.0 – "Pollution-Prevention Activities". The reasons for changes include:

B26.1.a Changes in production levels – See field B23.1.a.

B26.1.b Changes in estimation methods – See field B23.1.b.

B26.1.c Pollution-prevention activities – See field B23.1.c.

B26.1.d Changes in on-site treatment – See field B23.1.d.

B26.1.e Changes in off-site transfers for disposal – If chosen, you must report the off-site transfers for disposal in fields B20.0, B21.0, B22.0, B23.0 and B24.0.

B26.1.g Other – See field B23.1.g.

B26.1.h No significant change – No change or a change of less than 10% from the previous year.

B26.1.i Not applicable – First year reporting this substance.

B26.2 Comments (Recycling)

Comments specific to the recycling of this substance may be provided in this section. The comments will appear in the NPRI database available to the public and are an opportunity to provide context for the information reported to the NPRI.

B27.0 Anticipated Recycling

Enter your estimate of total transfers of the listed substance for recycling for the years 2001, 2002 and 2003. Years 2004 and 2005 are optional fields (select "Not applicable"). This section must be completed, even if there were no off-site transfers.

Pollution-Prevention (P2) Activities

In this section, facilities that have taken measures to prevent the generation of NPRI pollutants and wastes are required to indicate what P2 activities they have implemented.

Pollution prevention is defined as "the use of processes, practices, materials, products or energy that avoid or minimize the creation of pollutants and waste, and reduce the overall risk to human health or the environment" (Environment Canada, 1995). P2 seeks to eliminate the causes of pollution rather than managing it after it has been created. It encourages the kinds of changes that are likely to lead to lower production costs, increased efficiencies and more effective protection of the environment. **Pollution prevention does not include on-site treatment (pollution control) activities or off-site recycling and disposal activities.**

Report measures that have been taken to prevent the generation of NPRI pollutants and wastes. Measures applied after pollutants or wastes are generated are not pollution-prevention activities.

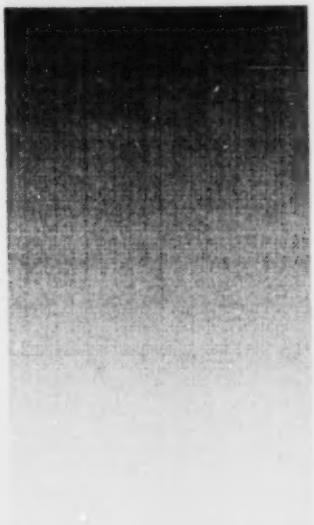
What Is Not a P2 Activity?

Measures applied only after pollutants or wastes are generated are not considered P2 activities. Rather, they are waste-management measures. Some examples follow:

- **Off-site recycling** – Off-site recycling (e.g., solvent recovery at a central distillation facility) is an excellent waste management option that is vastly preferable to other forms of waste handling because it helps to preserve raw materials and reduces the amount of material that will require disposal. However, it does create pollution during transport and during the recycling procedure. Compared with closed-loop recycling (or reuse), performed at the production site, there is likely to be more residual waste that will require disposal.
- **Waste treatment** – Waste treatment involves changing the form or composition of a waste stream through controlled reactions to reduce or eliminate the amount of pollutant. Waste treatment prior to disposal reduces the toxicity and/or disposal-site space requirements but does not prevent the creation of pollutants or eliminate all pollutant materials. Examples include volume reduction (e.g., dewatering), dilution, detoxification, incineration, decomposition, stabilization, and solidification or encapsulation.
- **Transferring hazardous or toxic constituents from one environmental medium to another** – Many waste-management, -treatment and -control practices used to date have simply collected pollutants and moved them from one environmental medium (air, water or land) to another. For example, bag houses are often used to collect particulates from waste streams. The collected particulate is often sent to landfill. This pollution-control measure reduces the potential for exposure and therefore the risk posed by the waste compared to a release to air, but it does not eliminate risk or reduce the amount of waste generated. Sending this material off site for recycling is preferable to landfill, but it too has risks associated with recovery operations and is not considered pollution prevention.

B30.0 Pollution-Prevention (P2) Activities

Qualitative reporting of P2 activities is a mandatory reporting requirement of the NPRI. If you have not implemented a P2 program at your facility, choose item B30.1.i. Otherwise, identify one or more of the P2 activities you have undertaken during the reporting year. If you selected "Pollution-prevention activities" in fields B14.1.c, B23.1.c or B26.1.c as a reason for changes in quantities released or transferred off site for disposal or recycling, you **must** identify the activity in this section.



B30.1.a Materials or feedstock substitution – e.g., using aqueous-based cleaners rather than solvent-based cleaners; using a non-toxic detergent to clean glassware rather than using chromic acid.

B30.1.b Product design or reformulation – e.g., reduce or eliminate the use of toxic substances by changing product specifications; modifying design or composition of products.

B30.1.c Equipment or process modifications – e.g., changing to mechanical stripping/cleaning devices from solvents; using more efficient spray-paint systems; instituting recirculation within a process.

B30.1.d Spill and leak prevention – e.g., measures to prevent releases such as installing splash guards and drip trays around equipment, such as solvent sinks, hot tanks and jet-spray washers, to collect and return drainage and contain leaks and spills.

B30.1.e On-site reuse, recycling or recovery – e.g., using a small distillation unit to reclaim solvents; recovering metals by ion exchange, reverse osmosis.

B30.1.f Improved inventory management or purchasing techniques – e.g., avoiding the unnecessary generation of waste by ensuring that materials do not stay in inventory beyond shelf life; instituting a clearinghouse to exchange materials that would otherwise be discarded.

B30.1.g Good operating practices or training – e.g., changing production schedules to minimize equipment and feedstock changeovers; improved maintenance scheduling; training staff to recognize pollution-prevention opportunities.

B30.1.h Other – Specify the pollution-prevention activities in field B30.2 "Comments".

B30.1.i No pollution-prevention activities.

B30.2 Comments (Pollution Prevention)

Facilities are encouraged to provide additional information describing the P2 initiatives they have implemented during the year, including results achieved (e.g., environmental results, economic benefits, etc.). The comments will appear in the NPRI database available to the public and are an opportunity to provide context for the information reported to the NPRI. Information on general P2 activities, such as water- and energy-conservation initiatives, should be entered in the facility P2 "Comments" field (A15.2).

Production Ratio and Activity Index

This section allows facilities, on a voluntary basis, to show the relationship between year-to-year fluctuations of their production levels and the relative decrease or increase in the sum of their on-site releases plus off-site transfers of the reported substance.

A "production ratio" is the ratio of "reporting-year production" to "prior-year production" that will permit year-to-year comparisons of changes in the total on-site releases plus off-site transfers. An "activity index" is based on a variable, other than production, that is the primary influence on the total, and that will in turn permit comparison of changes from year to year. While the use of a production ratio or activity index is not practical for some facilities, it does provide a means for facilities to report useful information to better understand trends in on-site releases and off-site transfers in a simple numerical format. Because changes in total on-site releases and off-site transfers may be the result of changes in production levels, a production ratio or activity index would help indicate, relatively speaking, whether a facility has, in fact, improved (or worsened) its environmental performance.

Provide a "ratio" of reporting-year production to prior-year production, or an "activity index" based on a variable other than production.

B40.0 Production Ratio and Activity Index (optional)

In this section, you are encouraged to provide a "ratio" of reporting-year production to prior-year production, or an "activity index" based on a variable other than production that was the primary influence on the total quantity of the reported substance released on site or transferred off site for final disposal or recycling. The ratio or index should be reported to two decimal places (i.e., two digits to the right of the decimal point). If the manufacture, processing or other use of the reported substance began during the current reporting year, enter **NA** ("Not applicable") as the production ratio or activity index.

It is important to realize that if your facility reports more than one substance, the production ratio or activity index may vary between substances. For facilities that manufacture the reported substance, the quantities produced in the current and previous year provide a good basis for the ratio because that is the primary business activity associated with the substance. However, in most cases, the production ratio or activity index must be based on some variable of production or activity rather than on the amount of substance manufactured, processed or otherwise used.

Select from the following examples, the production ratio or activity index that is the most appropriate method of adjusting the sum of on-site releases plus off-site transfers of the reported substance. If your facility reports more than one NPRI substance, the production ratio or activity index may vary from substance to substance. However, for a given substance, the same method of calculating a production ratio or activity index must be used from year to year to allow comparison. If the substance was used in more than one production process, you must use a production ratio that is based on a weighted average of the individual production ratios. If this is the first year reporting a substance, enter **NA** ("Not applicable") in field B40.1.

Determining a Production Ratio

The production ratio must be based on the variable that most directly affects the quantities of the substance released on site or transferred off site for final disposal or recycling. Examples of methods available include:

- amount of the substance manufactured divided by the amount of the substance manufactured in the preceding year, or
- amount of product produced divided by the amount of product produced in the preceding year.

Example 1
Your facility manufactured the reported NPRI substance and you have instituted a pollution-prevention program to reduce the fugitive emissions of the substance during manufacture, storage, packaging and shipping. An appropriate production ratio would simply be the amount of the substance manufactured during the reporting year divided by the amount manufactured in the previous year.

Example 2
Your facility's only use of toluene was as a paint carrier for a painting operation. You painted 12 000 refrigerators in the current reporting year and 10 000 refrigerators during the preceding year. In this case, the production ratio for toluene was 1.2 (12 000 ÷ 10 000) because the number of refrigerators produced is the primary factor determining the quantity of toluene to be reported.

Example 3
A facility manufactured inorganic pigments, including titanium dioxide. Hydrochloric acid was produced as a waste during the production process. An appropriate production ratio for hydrochloric acid is the annual titanium dioxide production, not the amount of hydrochloric acid generated. During the reporting year, 20 tonnes of titanium dioxide was manufactured. If the facility produced 26 tonnes in the preceding year, the production ratio would be 0.77 (20 ÷ 26).

Determining an Activity Index

In some situations, an activity other than production is the primary influence on the total quantity of the reported substance released on site or transferred off site for final disposal or recycling.

Example 1
Your facility manufactured organic dyes in a batch process. Different colours of dyes were manufactured and, between colour changes, all equipment had to be thoroughly cleaned with solvent containing glycol ethers to reduce colour carryover. During the preceding year, the facility manufactured four different colours in separate batches, totalling 15 tonnes. During the reporting year, the facility manufactured two colours, in separate batches, totalling 20 tonnes. Since the main activity affecting usage of the glycol ether was the cleaning associated with colour changeovers, the activity index would be 0.5 (2 colour changeovers in reporting year ÷ 4 colour changeovers in previous year). The total quantity of dye manufactured has no bearing on the usage of the glycol ethers and, therefore, is inappropriate for normalizing your facility's annual changes in releases and transfers.

Example 2
A facility that manufactures thermoplastic composite parts for aircraft used toluene as a wipe solvent to clean moulds. The moulds were cleaned on an as-needed basis that was not necessarily a function of the parts' production rate. Operators cleaned 5 200 moulds during the reporting year, but only cleaned 2 000 molds in the previous year. An activity index of 2.6 (5 200 ÷ 2 000) represents the activities involving toluene usage in the facility. If the moulds were cleaned regularly after every 1 000 parts were manufactured, the production ratio would be equal to the activity index and either could be used.

Example 3
A facility manufactured surgical instruments and cleaned the metal parts with 1,1,1-trichloroethane in a vapour degreaser. The degreasing unit is operated in a batch mode and the metal parts were cleaned according to an irregular schedule. The activity index can be based upon the total time the metal parts were in the degreasing operation. If the degreasing unit operated 3 900 hours during the reporting year and 3 000 hours the previous year, the activity index would be 1.3 (3 900 ÷ 3 000).

Determining a Production Ratio Based on a Weighted Average

At many facilities, an NPRI substance is used in more than one production process. In these cases, a production ratio or activity index can be estimated by weighting the production ratio for each process based on the respective contribution of each process to the quantity of the substance released or transferred off site for final disposal or recycling.

Example

Your facility painted bicycles with paint containing toluene. Sixteen thousand (16 000) bicycles were produced in the reporting year and 14 500 were produced in the previous year. There were no significant design modifications that changed the total surface area to be painted for each bike. The bicycle production ratio would be 1.1 (16 000 ÷ 14 500). You estimate that 12.5 tonnes of toluene were released on site or transferred off site for final disposal or recycling as a result of bicycle production. Your facility also used toluene as a solvent in a glue that was used to make components and add-on equipment for the bicycles. Thirteen thousand (13 000) components were manufactured in the reporting year, compared to 15 000 during the previous year. The production ratio for the components using toluene was 0.87 (13 000 ÷ 15 000). You estimate that 1.0 tonne of toluene was released on site or transferred off site for final disposal or recycling as a result of components' production. A production ratio can be calculated by weighting each of the production ratios based on the relative contribution each has on the quantities of toluene (13.5 tonnes during the reporting year) released on site or transferred off site for final disposal or recycling. The production ratio would be calculated as follows:

$$\text{Production ratio} = \left(\frac{12.5}{13.5} \times 1.1\right) + \left(\frac{1.0}{13.5} \times 0.87\right) = 1.08$$

You now have completed the 2000 reporting form for this substance. You have the options of saving the substance information, cancelling the changes or returning to the substance report.

Return to the "View/Enter/Edit Data" menu. From this menu, you can enter more substances for this facility or enter other facilities and other substances.

When all information concerning all of your facilities and all of your substances has been entered, **you must run the "Check for Reporting Errors" function** in the "Check Errors/Create Report" menu. Otherwise, the program will not allow you to copy the NPRI report to disk for submission to Environment Canada. See Section 4 – "Returning Information to Environment Canada".

Section 4 - Returning Information to Environment Canada

Copying an NPRI Report to Disk

Check for Errors

This is an essential step. The reporting software will not export an NPRI report to a disk until this function reports that no errors were detected. From the "Main Menu" select "Check Errors/Create Report" and then run the "Check for Reporting Errors" function to verify that all sections of the NPRI report were completed correctly. A status screen will indicate the number of facility and substance records being verified and the number of warnings and errors being found. The reporting software provides warnings if the reported releases and transfers seem unusually large. These warnings, unlike errors, will not prevent the NPRI report from being exported to a disk.

If errors are found, you will be prompted to view the error and warning messages. The list of error messages explains what errors were found and in which fields of the report they occurred. At any time, you can view or print the error messages to help find and correct errors in the report. Correct the errors that were reported and run the "Check for Reporting Errors" function again. This will clear the error codes and allow you to export your NPRI report to a disk. The most common problem encountered when creating a disk is that the "Check for Reporting Errors" function is not run again and previous error codes are not cleared.

Copy the NPRI Report to Disk

You must use the NPRI software to export a report, otherwise the data on the disk cannot be accepted by Environment Canada. From the "Main Menu" select "Check Errors/Create Report" and then select "Copy NPRI Report to Disk". Before copying the NPRI report to disk, you will be shown a summary of your facility and substance reports. Review the summary for accuracy. Ensure that a blank, formatted disk has been inserted into disk drive "A" or "B".

You should also create a copy of your report on disk for your files. Essential information from this report can be imported into next year's reporting software. Do not use other database programs to alter the data after export. This will result in your disk being rejected and will require a resubmission of your report.

Although rare, computer viruses have been detected on report disks submitted to the NPRI. If your disk is infected, you will be required to resubmit your report.

After making a copy on disk, slide the tab to open the "write protect" window on the corner of your 3.5″ disk.

Indicate on your disk the name of your facility, NPRI ID number (provided with the reporting package) and the date of submission. First-time reporters who have not received a permanent NPRI ID number can use the temporary ID number (e.g., 9000000001) generated by the software.

Complete the Statement of Certification

Your disk must be accompanied by a signed Statement of Certification. The statement should be signed by the same person identified as the "company official" for the facility in field A16.0.

If you are submitting your report by e-mail, send the signed Statement of Certification by fax to the same NPRI office to which you sent the e-mail.

From the "Main Menu" open the "Reports Menu" and choose "Print Statement of Certification". If you are unable to print from the software, please contact your regional NPRI office to obtain a Statement of Certification. See Appendix 3 for details on printing reports.

Return the NPRI Report to Environment Canada

Send the disk and the signed Statement of Certification to your regional NPRI office, postmarked or courier-dated **no later than June 1, 2001**. It is not necessary to provide a printed copy of the report with your disk.

Where disks contain reports for facilities in different regions of Canada, company coordinators are reminded that they are only required to send one report to the NPRI office in their region. For example, a company coordinator in Montreal, reporting for facilities in Edmonton, Vancouver and Toronto, is asked to send the reports to the NPRI regional office in Montreal.

If you need assistance, contact your regional NPRI office listed on the inside front cover.

Submitting an NPRI Report by E-mail

If you choose to submit your NPRI report by e-mail:

- Use the NPRI software to export the NPRI report to a floppy disk or a hard disk folder. Do not copy the files that are in the NPRI software directory. A complete NPRI report consists of two files:
  - disk.id
  - expodata.mdb

- Send these files as attachments in an e-mail to your regional NPRI office. In the subject line, clearly indicate that it is an NPRI report and include the NPRI ID number for your facility and the name of your company. Company coordinators are reminded that they are only required to send one report to the NPRI office in their region. In your e-mail message, include your name, address, telephone and facsimile numbers and e-mail address. Retain a copy of this e-mail for future reference.

- A signed Statement of Certification must accompany your NPRI report. Send a copy by facsimile to the same NPRI office to which you sent the e-mail. Keep the original signed Statement of Certification on file for future reference.

Reports submitted by e-mail and the signed Statement of Certification must be received by Environment Canada **no later than June 1, 2001**. NPRI regional contacts, their e-mail addresses, telephone and facsimile numbers are listed on the inside front cover of this guide and on the NPRI Web site.

Section 5 - Confidential Business Information

Request for Confidentiality

Reporting to the NPRI for 2000 is governed by the requirements of the *Canadian Environmental Protection Act (CEPA)*, 1999 as well as the *Canada Gazette* notice, published December 25, 1999. In that respect, requests for confidentiality of information submitted to the NPRI must be made pursuant to section 51 of *CEPA*, 1999. Please note that different rules with respect to confidentiality requests have been legislated in *CEPA*, 1999 than those in *CEPA*, 1988.

Pursuant to sections 51 and 313 of the *CEPA*, 1999, any person who provides information in response to the 2000 *Canada Gazette* notice may submit a written request that it be treated as confidential based on the reasons set out in section 52 of the *CEPA*, 1999. For each facility and each substance reported, the request for confidentiality must clearly indicate each field for which a request is being made. **The written request must accompany the report.**

It is recommended that you include with your request for confidential treatment, documentation that would be required to justify that the information submitted should be confidential as per the criteria outlined in section 52 of the *CEPA*, 1999.

If substantiation is not provided with the claim, or the substantiation provided doesn't support the claim, the Minister may follow the procedures with respect to publication of the information set out in section 53 of *CEPA*, 1999. Notwithstanding, the above, the Minister may, in the appropriate circumstances, contact the person to inform them that the information may be disclosed as permitted under sections 315 through 317 of the *CEPA*, 1999.

To be treated as confidential, the company must demonstrate that it treats the information as confidential and wishes to continue to do so. It must also demonstrate that this information is not available to the general public through legal means, such as obtaining a public copy of a provincial waste permit.

A request for confidentiality will be denied if the data are already in the public domain.

Necessary precautions should be taken when submitting an NPRI report for which a request for confidentiality is being made. This includes, but is not limited to, the following:

- confidential materials are to be sent in double envelopes, excluding the courier outer envelope
- the outside envelope should be unmarked except for mailing and return addresses, and postage, and
- the inside envelope should be stamped on both sides with wording such as "Contains Confidential Information".

A request for confidentiality is not determinative. A determination of whether the information is confidential will be based on an objective analysis of the facts.

Should you have any questions concerning confidentiality requests, please contact your regional NPRI office listed on the inside front cover.

Section 52 of the *CEPA*, 1999

With regards to information submitted to the NPRI, section 51 of the *CEPA*, 1999, allows any person to submit with the information, a written request, setting out the reason referred to in section 52 (see below), that the information be treated as confidential.

Section 52 of the *CEPA*, 1999, provides that:

52. Despite Part 11, a request under section 51 may only be based on any of the following reasons:

(a) the information constitutes a trade secret;
(b) the disclosure of the information would likely cause material financial loss to, or prejudice to the competitive position of, the person providing the information or on whose behalf it is provided; and
(c) the disclosure of the information would likely interfere with contractual or other negotiations being conducted by the person providing the information or on whose behalf it is provided.

Section 6 - Questions and Answers

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Questions and Answers

1. Is a facility meeting the criteria described in the *Canada Gazette* notice required to report if there were no releases of NPRI substances during the calendar year?

Yes. The reporting requirements vary by substance. The criteria for most NPRI substances are based on the quantity processed, manufactured or otherwise used, the total number of hours worked by employees or the activity for which the facility was used, and concentration of NPRI substances. The reporting criteria for mercury (and its compounds), PAHs, dioxins/furans and HCB differ from those previously mentioned, and details are provided in the *Supplementary Guide*. Once you meet the substance-specific reporting criteria, you must report for any NPRI substances, regardless of the amounts released or transferred.

2. Our facility closed part way through the calendar year. Are we required to submit an NPRI report?

Yes. If your facility met the reporting criteria and was in operation during any portion of the calendar year, you are required to report.

3. In British Columbia, several fish processors have factories on ships. They use ammonia and chlorine in their fish-processing operations. Is each ship considered a "facility" under the *Canada Gazette* notice or is the whole group of ships (assume one company) a facility?

A facility is defined as all buildings, equipment, structures, and other stationary items which are located at a single site or adjacent or contiguous sites owned or operated by the same person. A ship is not a facility as defined under the notice. It is not stationary and it is not located on a single site. Therefore, there is no requirement to report.

4. A barge-repair facility cleans barges by vacuuming out residual products containing listed substances and recycling them. Is the facility required to report?

The facility is processing the chemicals. If the threshold criteria for reporting are met, the facility must file a report. Releases during vacuuming must be reported as well as releases from related activities such as spills and equipment cleaning.

Routine cleaning of the exterior of the barge is considered maintenance of a transportation vehicle and is therefore exempt.

5. Does the determination of a full-time employee "equivalent" include the hours worked by sales staff whose offices are located in the same building as the production staff, or who work outside the facility?

Yes. All staff employed at a facility, regardless of function or location, count toward the employee threshold determination.

6. Would a facility with nine full-time employees and four part-time employees be required to report to the NPRI?

Total the hours worked by all people, including contractors who were performing work related to the operation of the facility. If the total was 20 000 hours or more during the reporting year, the threshold for the number of full-time employees has been met. However, if your facility was used for certain types of incineration or for wood preservation, as listed in the *Canada Gazette* notice, you must submit a substance report for any NPRI substance that met its respective reporting criteria, regardless of the number of hours worked by employees.

7. When calculating the total number of hours worked by all employees during the calendar year, should overtime, and vacation and sick leave used be included toward the 20 000-hour threshold?

Yes. The facility must include all overtime, and paid vacation and sick leave toward the 20 000-hour threshold.

8. When should an individual's time spent working at a facility be counted for purposes of determining whether or not a facility meets or exceeds the 20 000-hour threshold?

If an individual is employed by the facility or by the facility's parent company to work at the facility, then all of the hours worked by the individual must be counted toward the 20 000-hour threshold.

Contractors performing work related to the operations of the facility must also be included.

If an individual both owns and works for the facility, that individual's hours must also be applied toward the 20 000-hour threshold.

9. Is the owner or the operator responsible for reporting?

The *Canada Gazette* notice requires a person who owns or operates a facility to report information to which the person has access or can reasonably be expected to have access. This is usually the operator. However, both the owner and the operator are subject to the notice. If no report is received from a facility that meets the reporting requirements, both persons may be held liable.

10. Who is the parent company for a 50/50 joint venture?

The reporting form allows a number of parent companies to be entered with the percentage of ownership for each.

11. A facility had been operating its manufacturing processes in a leased warehouse. In July, they bought their own warehouse and moved the manufacturing operations. These two locations are neither adjacent nor contiguous. The company did not shut down or close during this time. How should the facility make threshold determinations and report to the NPRI?

The company must consider the locations as two separate facilities because the operations were carried out at two distinctly separate physical sites. Threshold determinations must be made for the period of time during which each facility operated.

A new NPRI ID number will be assigned to the new facility.

12. Acme Plastics is a wholly-owned subsidiary of a major chemical company which is a wholly-owned subsidiary of XYZ Oil Corp. Which is the parent company?

XYZ Oil Corp. is the parent company because it is the highest level company that directly controls Acme Plastics.

13. Two manufacturing facilities, owned by the same company, are divided by a public railway. Is this considered adjacent facilities or two separate facilities?

Two facilities owned or operated by the same company that function as a single integrated site, but are separated by a railway, would be considered adjacent sites since they are physically adjacent to one another except for a public right-of-way. Therefore, reporting thresholds would be determined by the combined quantities of substances processed, manufactured or otherwise used at both facilities. The 20 000-hour threshold would be determined by the sum of hours worked at both facilities.

14. A Vancouver-based company has a plant in Alberta which processes 12 tonnes of methanol, a plant in Ontario which processes 8 tonnes of methanol and a plant in Quebec which processes 11 tonnes of methanol. Do the three plants have to report as a company or can they report as separate facilities?

A report is required for each facility that meets the reporting criteria; their activities cannot be combined. In this case, the plant in Ontario is not required to report but the other two are if they meet the other reporting criteria. The company may choose to report for each of the facilities meeting the reporting criteria on one disk, or to have each facility submit their report separately.

15. When contractors working at a facility supply their own materials and supplies such as solvents containing NPRI substances, should these substances be included in the threshold determination and reported by the facility?

Yes. The owner or operator of the facility must include the quantities of NPRI substances used by contractors in their threshold calculations if those uses are relevant to the purpose of the facility.

16. An NPRI substance is the working fluid in our heat transfer equipment. Must the quantity of the NPRI substance be accounted for in determining the reporting threshold?

Yes. The fluid within the heat transfer equipment is considered to be an "other use" of the NPRI substance, relevant to the purposes of the facility as defined in the *Canada Gazette* notice. All of the NPRI substance in the heat transfer equipment must be included in the threshold calculation.

17. Our company disposes of some of its waste in a landfill site which belongs to the company but is in a different location. Is this an off-site transfer or a release?

This would be an off-site transfer for disposal if the landfill is not adjacent or contiguous with the facility; otherwise it would be a release.

18. Our company sorts scrap metal and compresses it into bales to be sold to secondary metal producers. Most of the metal we recover contains some NPRI substances (Zn, Cr) in excess of 1% concentration. The process does not release any NPRI substances; it only compresses the pieces into bales. Are we required to file a report?

No. In this case, the items being handled would retain their status as articles as long as there are no on-site releases to the environment or off-site transfers for disposal.

19. At what point in the processing of ore must mining companies report?

The exemption for mining is for activities related to the actual removal of ore, rock or overburden, up to and including primary crushing. Any NPRI substances used in the further processing of the rock or ore, such as milling, concentrating, smelting and refining, would be reportable if the thresholds are met. This would include, but not be limited to, NPRI substances found in the processed ore, solvents, acids, flotation agents, flocculation agents, and fuels used in power generation. Listed substances in tailings are not reported unless they leave the tailings impoundment or other forms of on-site containment.

20. If a substance is spilled one year, and will result in air emissions over time in the following year, how should it be reported?

The portion of the spill not cleaned up must be reported as a release the year the spill occurred. It must be reported as a release to the environmental media affected (air, water, land). Further migration between media does not need to be reported.

21. Can a facility use its own software to report electronically to the NPRI?

Environment Canada supplies the software required for reporting and strongly recommends that this be used to submit a report to the NPRI.

However, if you choose to use other software and the report submitted cannot be read and verified by Environment Canada's own reporting software, the report will be considered incomplete and be returned for correction.

Environment Canada reserves the right to change its software and file structure at any time.

22. We use a 50% methanol solution in one part of the plant. The annual consumption of methanol exceeds 10 tonnes. In another part of the plant, a completely separate process produces a few tonnes of methanol which are released through a stack. Do we have to estimate methanol releases from the stack even if they are from a different process?

Yes. Because your facility uses more than 10 tonnes of methanol, it is required to report all its releases of methanol, regardless of the process stream.

23. We have a provincial waste permit to discharge sulphuric acid at a pH between 5.8 and 6.6. How do we report our releases of sulphuric acid if we meet all the reporting requirements?

Releases of mineral acids at a pH of 6.0 or greater are considered neutralized and must be reported as zero (0). The portion of acid discharged at a pH less than 6.0 will constitute a reportable release and must be calculated and reported.

24. We send an NPRI substance to an outside company for recovery. The recovered substance is then sent back to us for reuse. Does the recovered substance count toward the threshold calculation?

Yes, if the recovered substance is being processed or used it would have to be included in the threshold calculation since it is no different than new material being processed or used.

25. A company engaged in electroplating is using equipment and lead anodes purchased and installed before the current reporting year. Fifteen tonnes of lead anodes were originally installed in the plating tanks. The lead anodes dissolve over time and the lead ends up in the sludge and the wastewater. During the calendar year, the company replaced 7 tonnes of lead anodes. Does the company have to submit an NPRI report for lead?

Yes. The entire electrode assembly is considered to be an "other use" of lead, relevant to the purposes of the facility as defined in the *Canada Gazette* notice. The entire quantity of lead in the electrode assembly (15 tonnes), must be used in the threshold calculation, not just the 7 tonnes consumed in the process.

26. When do metal parts, sheets or wire containing NPRI substances lose their status as articles?

Metal parts, sheets or wire lose their article status when there are releases to the environment or transfers for disposal.

If all materials removed during processing, such as turnings or blanks, are completely recycled and due care has been exercised to ensure that the materials are 100% recycled within the facility, the materials retain their article status.

Due care is considered to have been exercised if no more than 1 kg (0.001 tonne) of an NPRI Part 1 substance is released in a given year as a result of the processing or other use of an article.

Typical metal processing activities that violate article status include welding, torch cutting, quenching, etching and dry grinding.

Typical metal processing activities that do not violate article status (assuming "due care" is exercised in ensuring 100% recycling of materials) include cutting, stamping, bending, punching, machining, shearing, soldering and cold extrusion.

27. Our company purchases metal parts and then welds them together using welding rods. We then paint them and glue other parts to them. What would be reportable in this case?

The original parts would lose their status as articles during welding because the welding process releases emissions to the air. The quantity of NPRI substances contained in the parts would be used to calculate the reporting threshold. The quantity of NPRI substances in the welding rods would also be included in the calculation of the reporting threshold.

The NPRI substances contained in the paints and glues would be reportable if the threshold criteria are met.

28. Is the use of fuel exempt from reporting?

No. The use of fuel is not implicitly exempt from reporting. Use of fuel in a stationary system, such as for power generation, would be reportable if the threshold criteria are met.

Retail sale and fuel distribution are exempt. Refueling of motor vehicles is also covered by this exemption even if the vehicle is refueled from a tank on company property. Mobile sources such as vehicles and earth-moving equipment are not stationary items considered part of a facility. They are not to be included in the calculation of the reporting threshold.

29. Chromated copper arsenate (CCA), is used in the wood-treatment industry but is not on the NPRI substance list. Do we have to report?

While CCA is not an NPRI substance, copper, chromium, arsenic and their compounds are on the list. A threshold calculation must be performed for each individual substance.

A typical bulk solution of CCA (50% concentrate) contains 12.3% Cr, 7.39% Cu, and 11.09% As, by weight. A company would have to use 81.3 tonnes of 50% concentrate of CCA to render Cr reportable. In this situation, As and Cu would not be reportable since they do not exceed the 10-tonne threshold.

30. Should fugitive dust from tailings dams and tailings impoundments be reported to the NPRI as releases?

Yes. NPRI substances that are released as fugitive emissions must be reported. The deposit of NPRI substances contained in the mineral portion of the ore or rock to a tailings impoundment is not reportable, but releases from the impoundment or dam are.

31. Our mine operates a wastewater treatment system for a tailings impoundment effluent. The treatment process generates a metal hydroxide sludge containing two NPRI substances. The sludge is pumped back into the tailings impoundment. Are the NPRI substances in the sludge considered releases?

Substances that are pumped back into a tailings impoundment are not considered releases. The amount of substances leaving the tailings impoundment would be reported as a release.

32. Should hydraulic backfill pumped underground and used for filling open stopes for ground control be reported?

No. Stope filling for ground control is part of the extraction process and is therefore exempt under the mining exemption.

33. We use zinc in our primary crusher as backing for concaves and shells. Is it reportable?

No. The mining exemption is for extraction up to and including primary crushing.

34. Do NPRI substances contained in a refractory brick furnace have to be reported?

No. Refractory bricks would retain their status as articles as long as they do not release any NPRI substances during normal use. However, the refractory bricks lose their article status if during normal conditions of use they degrade and release NPRI substances. In that event, the total quantity of NPRI substances in the refractory lining must be used in the calculation of the 10-tonne reporting threshold.

35. Our ore-processing facility uses greases and fuels to operate the many machines used in the benefaction of the ore. Are NPRI substances in these greases and fuels reportable?

Yes. Process equipment maintenance using materials such as grease, oils or lubricants, disinfectants or paint, etc., is not exempt and must be considered for the purposes of NPRI reporting.

The use of greases and fuels in this situation would be considered "other use".

36. We use more than 10 tonnes of sodium cyanide in our flotation beds. The substance is entirely consumed and transformed to non-ionic cyanides in the process. We meet all other reporting criteria. Are we required to report?

Yes. Reporting of NPRI Part 1 and 2 substances is based on quantity manufactured, processed or otherwise used, not on quantities released. You must perform your threshold calculations based on the amount of cyanide ion used or processed and file a report if you meet or exceed 10 tonnes. Since non-ionic forms of cyanide are not on the NPRI substance list, you would report a zero release of cyanide ion.

37. We use copper sulphate as a reagent. During the process, it attaches itself to other compounds and remains with the concentrate. There are no releases. Is it reportable?

Yes, if the amount of copper meets or exceeds the threshold reporting requirements, you would file a report for "Copper (and its compounds)" and report a release of zero for this process. All other releases of copper from your facility would also have to be reported.

38. We use zinc sulphate, zinc oxide and zinc stearate. How do we handle reporting of all these different metal compounds?

Report only the zinc portion of the compounds under the substance name "Zinc (and its compounds)".

39. Is fuel used for fire-training purposes reportable to the NPRI?

A facility used for the education or training of students is exempt from reporting. Therefore the use of fuels does not need to be reported.

40. We store products in our warehouse that don't belong to us. We do not use these products in the operation of our warehouse. Some of these products contain NPRI substances. Are we required to report?

No. A warehouse is not required to report if it does not manufacture, process or otherwise use NPRI substances. Transfer of NPRI substances between containers is considered processing.

Wholesale distribution is exempt provided there are no releases of NPRI substances.

41. We buy bulk NPRI substances in tanks and drums. Some of these substances are simply repackaged in smaller containers (e.g., tanks to drums, drums to 4-litre plastic bottles). However, some of the substances are mixed together and then repackaged. Are we required to report?

Transfer of substances between containers is considered processing and those quantities must be included in the threshold calculation.

Mixing substances together prior to packaging is also considered processing.

42. We use an NPRI substance in our process that meets all the reporting criteria. Unfortunately, we have no data on possible releases and we cannot find any estimation factors. Is a release of zero acceptable in this case?

For substances other than dioxins/furans and HCB, you are required to report the information that you possess. You must report your facility information and identify the substances for which a report is required. If you meet the reporting criteria for dioxins/furans and HCB, but have no data and cannot find emission factors, you are required to report "no information available" ("Basis of Estimate" code "NI") for any releases and transfers expected to contain these substances (e.g., releases to air from a combustion process that generates dioxins/furans). You would report "zero" releases only if it is known that these substances were not released or transferred. A release of zero will be accepted, but the comment section should include a statement that releases and transfers could not be estimated.

43. We purchased 12 tonnes of an NPRI substance to prepare a solution for our new metal-cleaning baths. The baths will be used this year. How do we calculate the "otherwise use" threshold for this year and the following years?

The metal-cleaning bath is considered to be an "other use" of NPRI substance, relevant to the purposes of the facility as defined in the *Canada Gazette* notice. The entire quantity of the NPRI substance in the metal-cleaning bath plus any quantity used to top up the bath must be used in the threshold calculation, not just the quantity consumed in the process.

44. Are vinyl chloride and polyvinyl chloride (PVC) the same compound?

No. Polyvinyl chloride is a polymer made from vinyl chloride. It is not the same substance and is not listed in the NPRI, therefore it is not reportable. Only free vinyl chloride monomer is reportable. Some formulations of pre-polymers may contain a percentage of free monomer. If you purchase pre-polymers which contain free vinyl chloride monomer, add this to the threshold calculation.

45. Asbestos is listed with the CAS number 1332-21-4. We use asbestos with the following names and CAS numbers: Azbolen (17068-78-9), Actinolite (77536-66-4), Amosite (12172-73-5), Anthropylite (77536-67-5), Tremolite (77536-68-6) and Serpentine. Are we required to report?

The CAS number 1332-21-4 is defined as: "Asbestos, a greyish, non-combustible fibrous material. It consists primarily of impure magnesium silicate". Asbestos with the CAS number 1332-21-4 is the general CAS number for a number of specific types of asbestos including those mentioned. Those types of asbestos would be reportable as long as they are in friable form.

46. A facility coats materials using a vacuum deposition process. When it uses aluminum for coating, is it required to report for aluminum fumes?

In vacuum deposition, the metal is converted to a vapour state under low pressure. The vapour condenses on the material to be coated. Vapours are not fumes. A metal fume consists of finely-divided particulate matter dispersed in a gas (like smoke). Because vapours and fumes are different, this process would not be considered a reportable activity unless the condensation creates fumes or dust.

47. What types of routine maintenance are exempt?

Routine janitorial or other facility grounds maintenance activities that may use NPRI substances which would be contained in cleaners, fertilizers or pesticides are exempt.

Process equipment maintenance using materials such as grease, oils or lubricants, disinfectants or paint, etc., is not exempt and must be considered for the purposes of NPRI reporting.

48. Our process uses metal grinding wheels which suffer regular abrasion. Would NPRI substances in these wheels be reportable?

Yes. Items such as grinding wheels are, by their nature and use, intended to wear down and release substances. They are designed to be replaced and are subject to reporting.

49. Are degreasers used in a plant's maintenance shop reportable?

Yes. Degreasing of equipment for maintenance is not considered routine maintenance and is not exempt. It would be reported as "otherwise used".

50. Is our quality control laboratory exempt from reporting under the research and testing exemption?

Yes, assuming that the laboratory does not perform pilot-plant scale studies or specialty chemical production.

51. Are photo development laboratories exempt?

No. The laboratory exemption includes research facilities which perform auxiliary functions to the manufacturing or processing activities of a facility. Photo development laboratories do not perform auxiliary functions but perform activities which are essential to the development of their products (photographs, films, etc.).

52. We buy more than 10 tonnes of chlorine gas and use it in a reaction vessel to produce more than 10 tonnes of chlorine dioxide. We then dilute the chlorine dioxide to less than 1% concentration. What do we have to report?

Because you meet the reporting threshold for chlorine gas, you are required to report any releases and transfers of chlorine gas. Because you manufacture chlorine dioxide at a concentration greater than 1%, you are required to report any releases and transfers of chlorine dioxide. The subsequent dilution of the chlorine dioxide does not affect the threshold calculation.

53. How do we treat a solvent sent off site for distillation and then shipped back to us?

A solvent received from a recycling operation located off-site counts as new material and must be included in the threshold calculation. The quantity sent off site for distillation must be reported as material sent for recycling.

54. We use a paint thinner that contains toluene. We also use toluene in another part of our plant. In total, more than 10 tonnes of toluene are used annually. The waste thinner is sent to an off-site facility for blending in fuels. How do we report this activity?

NPRI substances sent off site for fuel blending or that add energy to a heat recovery activity must be reported as a transfer for energy recovery. Other releases or transfers of toluene must also be reported.

55. Are NPRI substances used in maintenance activities, such as paint booth cleaning, reportable?

Paint booth cleaning is not considered a routine janitorial activity and would be reportable under the classification "other use".

56. How does the NPRI definition of a facility apply to a multi-plant site?

"Facility" is defined in the *Canada Gazette* notice. It includes all buildings or structures located on a single site or on adjacent sites which are owned or operated by the same person and function as a single integrated site.

Plants must report separately if they manufacture or process unrelated products and if they do not share common manufacturing or processing operations. For example, a battery plant and a vehicle-assembly plant, located side-by-side, are two distinct manufacturing operations that have different SIC codes. In the case of the battery plant, it also ships products to other installations. Other examples are smelters and fertilizer plants, a refinery and a chemical plant.

57. Is reporting to the NPRI mandatory under the *Canadian Environmental Protection Act (CEPA)*? If so, how will it be enforced?

It is the responsibility of each person who owns or operates a facility to determine whether they are required to report after examining the *Canada Gazette* notice and the *CEPA*. There is an enforcement and compliance policy under the *CEPA* which dictates how regulations and notices are enforced.

58. A facility that previously reported to the NPRI has been split up and is now owned and operated by two separate companies. How should they report to the NPRI?

If the companies are owned by the same parent company AND function as a single integrated facility, they must report as one facility. If they do not meet both of these conditions, they must perform separate threshold calculations and report separately.

59. Are substances regulated under other legislation (e.g., *Pest Control Products Act*) exempt from reporting under the NPRI?

There is no exemption for substances regulated under other legislation.

60. Is a solid waste landfill required to report to the NPRI?

Solid waste landfills process NPRI substances and if the facility meets the other threshold criteria, it is required to report.

Additionally, landfills can generate, as a consequence of their process, by-products such as ammonia in their leachate.

References and Bibliography

References

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Environment Canada (1993) "User's Guide to Hazardous Waste Classification".

Statistics Canada (1998) "North American Industry Classification System (NAICS) Canada Manual – 1997", Catalogue 12-501-XPE, Ottawa, ON.

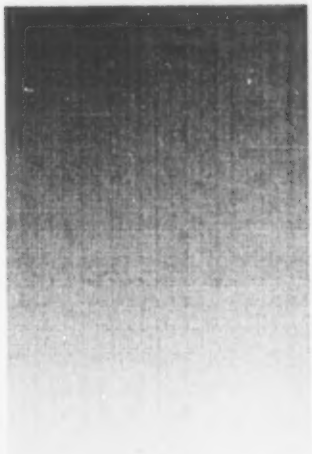
Statistics Canada (1989) "Standard Industrial Classification – 1980", Standards Division, Catalogue 12-501E, Ottawa, ON.

Publications of the U.S. Environmental Protection Agency

Guidance Documents for Reporting to the Toxics Release Inventory

In 1988 and 1990, the Office of Pollution Prevention and Toxics of the U.S. Environmental Protection Agency (U.S. EPA) developed many industry-specific guidance manuals to help industries estimate the releases for reporting to the Toxics Release Inventory (TRI). Since 1998, some of these manuals have been revised and some additional industry-specific guidance manuals have been prepared. These manuals, listed below, could also be used for reporting to the NPRI.

1. *Estimating Chemical Releases from Monofilament Fiber Manufacturing*, EPA 560/4-88-004a (January, 1988).
2. *Estimating Chemical Releases from Printing Operations*, EPA 560/4-88-004b (January, 1988).
3. *Estimating Chemical Releases from Electrodeposition of Organic Coatings*, EPA 560/4-88-004c (January, 1988).
4. *Estimating Chemical Releases from Spray Application of Organic Coatings*, EPA 560/4-88-004d (January, 1988).
5. *Estimating Chemical Releases from Semi-Conductor Manufacturing*, EPA 560/4-88-004e (January, 1988).



6. *Estimating Chemical Releases from Formulation of Aqueous Solutions,* EPA 560/4-88-004f (March, 1988).
7. *Estimating Chemical Releases from Electroplating Operations,* EPA 560/4-88-004g (January, 1988).
8. *Estimating Chemical Releases from Textile Dyeing,* EPA 560/4-88-004h (February, 1988).
9. *Estimating Chemical Releases from Presswood and Laminated Wood Products Manufacturing,* EPA 560/4-88-004i (March, 1988).
10. *Estimating Chemical Releases from Roller, Knife, and Gravure Coating Operations,* EPA 560/4-88-004j (February, 1988).
11. *Estimating Chemical Releases from Paper and Paperboard Production,* EPA 560/4-88-004k (February, 1988).
12. *Estimating Chemical Releases from Leather Tanning and Finishing,* EPA 560/4-88-0041 (February, 1988).
13. *Estimating Chemical Releases from Wood Preserving Operations,* EPA 560/4-88-004p (February, 1988).
14. *Estimating Chemical Releases from Rubber Production and Compounding Operations,* EPA 560/4-88-004q (March, 1988).
15. *Issue Paper – Clarification and Guidance for the Metal Fabrication Industry,* (January, 1990).
16. *Guidance for Food Processors,* EPA 560/4-90-014 (June, 1990).
17. *EPCRA Section 313 Reporting Guidance For Food Processors (Update),* EPA 745-R-98-011 (September, 1998).
18. *EPCRA Section 313 Reporting Guidance for Spray Application and Electrodeposition of Organic Coatings,* EPA 745-R-98-014 (December, 1998).
19. *Industry Guidance for Coal Mining Facilities,* EPA 745-B-99-002 (January, 1999).
20. *Industry Guidance for Electricity Generating Facilities,* EPA 745-B-99-003 (January, 1999).
21. *Industry Guidance for Metal Mining Facilities,* EPA 745-B-99-001 (January, 1999).
22. *Industry Guidance for Chemical Distribution Facilities,* EPA 745-B-99-005 (January, 1999).
23. *Industry Guidance for RCRA Subtitle C TSD Facilities and Solvent Recovery Facilities,* EPA 745-B-99-004 (January, 1999).
24. *Industry Guidance for Petroleum Terminals and Bulk Storage Facilities,* EPA 745-B-99-006 (January, 1999).
25. *EPCRA Section 313 Reporting Guidance for Semiconductor Manufacturing,* EPA 745-R-99-007 (July, 1999).
26. *EPCRA Section 313 Reporting Guidance for Leather Tanning and Finishing Industry,* EPA 745-B-00-012 (April, 2000).
27. *EPCRA Section 313 Reporting Guidance for the Printing, Publishing, and Packaging Industry,* EPA 745-B-00-005 (May, 2000).
28. *EPCRA Section 313 Reporting Guidance for Rubber and Plastics Manufacturing,* EPA 745-B-00-017 (May, 2000).
29. *EPCRA Section 313 Reporting Guidance for the Textile Processing Industry,* EPA 745-B-00-008 (May, 2000).

In addition, the U.S. EPA has developed a group of guidance documents specific to individual chemicals and chemical categories. Some of these documents are relevant to be used for reporting to the NPRI and are listed below.

30. *Guidance for Reporting Aqueous Ammonia,* EPA 745-R-95-012 (July, 1995).
31. *List of Toxic Chemicals Within The Water Dissociable Nitrate Compounds Category and Guidance for Reporting – Revised,* EPA 745-R-96-004 (May, 1996).
32. *Guidance for Reporting Sulfuric Acid (acid aerosols including mists, vapors, gas, fog, and other airborne forms of any particle size),* EPA 745-R-97-007 (November, 1997 and updated March, 1998).
33. *Guidance for Reporting Toxic Chemicals within the Polycyclic Aromatic Compounds Category,* EPA 745-R-99-009 (June, 1999).
34. *List of Toxic Chemicals within the Polychlorinated Alkanes Category and Guidance for Reporting,* EPA 745-B-99-023 (June, 1999).
35. *Guidance for Reporting Hydrochloric Acid (acid aerosols including mists, vapors, gas, fog, and other airborne forms of any particle size),* EPA 745-B-99-014 (December, 1999)
36. *Guidance for Reporting Toxic Chemicals within the Dioxin and Dioxin-like Compounds Category (Draft),* EPA 745-B-00-00X (May, 2000).

Locating and Estimating (L&E) Documents

To assist groups interested in preparing inventories of air emissions of various potentially toxic substances, the U.S. EPA Office of Air Quality and Planning Standards has prepared a series of L&E documents that compiles available information on sources and emissions of these substances. Documents in this series are listed below.

SUBSTANCE	EPA PUBLICATION #	DATE
37. Acrylonitrile	EPA-450/4-84-007a	1984
38. Arsenic and Arsenic Compounds	EPA-454/R-98-013	June 1998
39. Benzene	EPA-450/4-84-007q	1988
40. Benzene (Update)	EPA-450/R-98-011	June 1998
41. 1,3-Butadiene	EPA 450/2-89-021	1989
42. 1,3-Butadiene (Update)	EPA-454/R-96-008	Nov. 1996
43. Cadmium and Cadmium Compounds	EPA-454/R-93-040	Sept.1993
44. Carbon Tetrachloride	EPA-450/4-84-007b	March 1984
45. Chlorobenzenes	EPA-450/4-84-007m	1986
46. Chlorobenzenes (Update)	EPA-454/R-93-044	March 1994
47. Chloroform	EPA-450/4-84-007c	March 1984
48. Chromium	EPA-450/4-84-007g	July 1984
49. Chromium (Supplement)	EPA-450/2-89-002	August 1989
50. Coal and Oil Combustion Sources	EPA 450/2-89-001	1989
51. Cyanide Compounds	EPA-454/R-93-041	Sept. 1993
52. Dioxins and Furans	EPA-454/R-97-003	May 1997
53. Epichlorohydrin	EPA-450/4-84-007j	March 1984
54. Ethylene Dichloride	EPA-450/4-84-007d	March 1984
55. Ethylene Oxide	EPA-450/4-84-0071	Sept. 1986
56. Formaldehyde	EPA-450/4-84-007e	1984
57. Formaldehyde (Update)	EPA-450/4-91-012	March 1991
58. Lead and Lead Compounds	EPA-454/R-98-006	May 1998
59. Manganese	EPA-450/4-84-007h	1986
60. Medical Waste Incinerators	EPA-454/R-93-053	1993
61. Mercury and Mercury Compounds	EPA-453/R-93-023	1993
62. Mercury and Mercury Compounds (Update)	EPA-454/R-97-012	Dec. 1997
63. Methylene Chloride	EPA-454/R-93-006	February 1993
64. Methyl Ethyl Ketone	EPA-454/R-93-046	March 1994
65. Municipal Waste Combustion	EPA-450/2-89-006	1989
66. Nickel	EPA-450/4-84-007f	1984
67. Organic Liquid Storage Tanks	EPA-450/4-88-004	1988
68. Perc and Trichloroethylene	EPA 450/2-89-013	1989
69. Phosgene	EPA-450/4-84-007i	1986
70. Polycyclic Organic Matter	EPA-454/R-98-014	July 1998
71. Sewage Sludge Incinerators	EPA 450/2-90-009	1990
72. Styrene	EPA-454/R-93-011	April 1993
73. Toluene	EPA-454/R-93-047	March 1994
74. Vinylidene Chloride	EPA-450/4-84-007k	Sept. 1985
75. Xylenes	EPA-454/R-93-048	March 1994

Other Documents from the U.S. EPA

76. *Compilation of Air Pollutant Emission Factors, Vol. 1: Stationary Point and Area Sources,* U.S. EPA, AP-42, 5th Edition (1996), and AP-42 Supplements A, B, C, D, E, and F (1996, 1997, 1998, 1999, and 2000).

77. *Toxic Air Pollutant Emission Factors – A Compilation for Selected Air Toxic Compounds and Sources, Second Edition,* U.S. EPA, EPA 450/2-90-011 (1990).

78. *Protocols for Equipment Leak Emission Estimates,* U.S. EPA, EPA 453/R-95-017 (November, 1995).

79. *Hot Mix Asphalt Plants - Emission Assessment Report (Draft),* U.S. EPA, EPA 454/R-00-0XX (June, 2000). *<www.epa.gov/ttn/emc/asphalt.html>*.

Copies of the U.S. EPA documents are available from:

U.S. Environmental Protection Agency
National Center For Environmental Publications and Information (NCEPI)
P.O. Box 42419
Cincinnati, OH 45242
U.S.A.

Tel: (513) 489-8190
Fax: (513) 489-8695

They can be downloaded from the U.S. Toxics Release Inventory (TRI) Web site at <www.epa.gov/tri> or the U.S. EPA's Technology Transfer Network Web site at <www.epa.gov/ttn/chief/>.

Or, they can be ordered from:

National Technical Information Service
5285 Port Royal Road
Springfield, VA 22161
U.S.A.

Tel: (703) 605-6000
Fax: (703) 605-6900
E-mail: orders@ntis.fedworld.gov
Web site: www.ntis.gov/

Documents Produced by Industry Associations

80. *Evaporation Loss from External Floating Roof Tanks*, American Petroleum Institute, Publication 2517 (1994).

81. *Evaporation Loss from Fixed Roof Tanks*, American Petroleum Institute, Chapter 19.1 (1991).

82. *Evaporation Loss from Internal Floating Roof Tanks*, American Petroleum Institute, Publication 2519 (1996).

83. *Review of Air Toxic Emission Calculations from Storage Tanks, Air Toxic Emissions Calculation Validation Program: Analysis of Crude Oil and Refined Product Samples and Comparison of Vapor Composition to Model Predictions,* American Petroleum Institute, Publication 2525 (1992).

Copies of the above reports can be ordered from:

American Petroleum Institute
Order Desk
1200 L Street Northwest
Washington, DC 20005
U.S.A.

Tel: (202) 682-8375
Fax: (202) 962-4776

84. *NCASI Handbook of Chemical Specific Information for SARA Section 313 Form R Reporting – and yearly updates*, National Council of The Paper Industry for Air and Stream Improvement Inc. (1991).

85. *Handbook of Substance-Specific Information for National Pollutant Release Inventory (NPRI) Reporting*, National Council of the Paper Industry for Air and Stream Improvement Inc. (2000).

The reports can be ordered either from:

NCASI
P.O. Box 13318
Research Triangle Park, NC 27709-3318
U.S.A.

Tel: (919) 558-1999
Fax: (919) 558-1998

Or, if you are a member of the CPPA, from:

Canadian Pulp and Paper Association
1155 Metcalfe St., 19th Floor
Montreal, QC
H3B 4T6

Tel: (514) 866-6621
Fax: (514) 866-3035

General Information

86. Howard, P. H. and M. Neal, *Dictionary of Chemical Names and Synonyms*, Lewis Publishers, Chelsea, MI (1992).

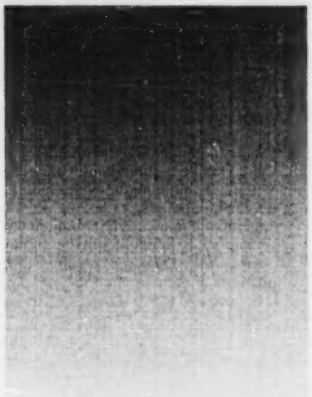
87. Lide, David R., *CRC Handbook of Chemistry and Physics, 75th Edition*, CRC Press, Inc., Boca Raton, FL (1995) pp. 15-38, *Characteristics of Particles and Particle Dispersoids*.

Appendix 1 – Alphabetical Listing of NPRI Substances for 2000

The substances are listed in four parts as they appear in the 2000 *Canada Gazette* notice. **The 23 substances added to the NPRI for 2000 are in bold lettering**. The reporting criteria for substances listed in Part 1 are discussed in this *Guide*. The reporting criteria for alternate-threshold substances, listed in Parts 2-4, are discussed in the *Supplementary Guide for Reporting to the National Pollutant Release Inventory – Alternate Thresholds – 2000*.

Schedule 1, Part 1, Substances

NAME	CAS No.[1]	NAME	CAS No.[1]
Acetaldehyde	75-07-0	C.I. Acid Green 3	4680-78-8
Acetonitrile	75-05-8	C.I. Basic Green 4	569-64-2
Acetophenone	98-86-2	C.I. Basic Red 1	989-38-8
Acrolein	**107-02-8**	C.I. Direct Blue 218	28407-37-6
Acrylamide	79-06-1	C.I. Disperse Yellow 3	2832-40-8
Acrylic acid [2]	79-10-7	C.I. Food Red 15	81-88-9
Acrylonitrile	107-13-1	C.I. Solvent Orange 7	3118-97-6
Alkanes, C_{6-18}, chloro	68920-70-7	C.I. Solvent Yellow 14	842-07-9
Alkanes, C_{10-13}, chloro	85535-84-8	Cadmium [6]	*
Allyl alcohol	107-18-6	Calcium cyanamide	156-62-7
Allyl chloride	107-05-1	Calcium fluoride	7789-75-5
Aluminum [3]	7429-90-5	Carbon disulphide	75-15-0
Aluminum oxide [4]	1344-28-1	Carbon tetrachloride	56-23-5
Ammonia (total) [5]	*	Catechol	120-80-9
Aniline [2]	62-53-3	CFC-11	75-69-4
Anthracene	120-12-7	CFC-12	75-71-8
Antimony [6]	*	CFC-13	75-72-9
Arsenic [6]	*	CFC-114	76-14-2
Asbestos [7]	1332-21-4	CFC-115	76-15-3
Benzene	71-43-2	Chlorendic acid	115-28-6
Benzoyl chloride	98-88-4	Chlorine	7782-50-5
Benzoyl peroxide	94-36-0	Chlorine dioxide	10049-04-4
Benzyl chloride	100-44-7	Chloroacetic acid [2]	79-11-8
Biphenyl	92-52-4	Chlorobenzene	108-90-7
Bis(2-ethylhexyl) adipate	103-23-1	Chloroethane	75-00-3
Bis(2-ethylhexyl) phthalate	117-81-7	Chloroform	67-66-3
Boron trifluoride	7637-07-2	Chloromethane	74-87-3
Bromine	7726-95-6	3-Chloro-2-methyl-1-propene	563-47-3
1-Bromo-2-chloroethane	107-04-0	3-Chloropropionitrile	542-76-7
Bromomethane	74-83-9	Chromium [6]	*
1,3-Butadiene	106-99-0	Cobalt [6]	*
2-Butoxyethanol	111-76-2	Copper [6]	*
Butyl acrylate	141-32-2	Cresol [2,8]	1319-77-3
i-Butyl alcohol	78-83-1	*m*-Cresol [2]	108-39-4
n-Butyl alcohol	71-36-3	*o*-Cresol [2]	95-48-7
sec-Butyl alcohol	78-92-2	*p*-Cresol [2]	106-44-5
tert-Butyl alcohol	75-65-0	Crotonaldehyde	4170-30-3
Butyl benzyl phthalate	85-68-7	Cumene	98-82-8
1,2-Butylene oxide	106-88-7	Cumene hydroperoxide	80-15-9
Butyraldehyde	123-72-8	Cyanides [9]	*



NAME	CAS No.[1]
Cyclohexane	110-82-7
Cyclohexanol	108-93-0
Decabromodiphenyl oxide	1163-19-5
2,4-Diaminotoluene [2]	95-80-7
2,6-Di-*t*-butyl-4-methylphenol	128-37-0
Dibutyl phthalate	84-74-2
o-Dichlorobenzene	95-50-1
p-Dichlorobenzene	106-46-7
3,3'-Dichlorobenzidine dihydrochloride	612-83-9
1,2-Dichloroethane	107-06-2
Dichloromethane	75-09-2
2,4-Dichlorophenol [2]	120-83-2
1,2-Dichloropropane	78-87-5
Dicyclopentadiene	77-73-6
Diethanolamine [2]	111-42-2
Diethyl phthalate	84-66-2
Diethyl sulphate	64-67-5
Dimethylamine	124-40-3
N,N-Dimethylaniline [2]	121-69-7
Dimethyl phenol	1300-71-6
Dimethyl phthalate	131-11-3
Dimethyl sulphate	77-78-1
4,6-Dinitro-*o*-cresol [2]	534-52-1
2,4-Dinitrotoluene	121-14-2
2,6-Dinitrotoluene	606-20-2
Dinitrotoluene [8]	25321-14-6
Di-*n*-octyl phthalate	117-84-0
1,4-Dioxane	123-91-1
Diphenylamine	122-39-4
Epichlorohydrin	106-89-8
2-Ethoxyethanol	110-80-5
2-Ethoxyethyl acetate	111-15-9
Ethoxynonyl benzene	28679-13-2
Ethyl acrylate	140-88-5
Ethylbenzene	100-41-4
Ethyl chloroformate	541-41-3
Ethylene	74-85-1
Ethylene glycol	107-21-1
Ethylene oxide	75-21-8
Ethylene thiourea	96-45-7
Fluorine	7782-41-4
Formaldehyde	50-00-0
Formic acid	64-18-6
Halon 1211	353-59-3
Halon 1301	75-63-8
HCFC-22	75-45-6
HCFC-122 and all isomers [10]	41834-16-6
HCFC-123 and all isomers [11]	34077-87-7
HCFC 124 and all isomers [12]	63938-10-3
HCFC-141b	1717-00-6
HCFC-142b	75-68-3
Hexachlorocyclopentadiene	77-47-4
Hexachloroethane	67-72-1
Hexachlorophene	70-30-4
n-Hexane	110-54-3

NAME	CAS No.[1]
Hydrazine [2]	302-01-2
Hydrochloric acid	7647-01-0
Hydrogen cyanide	74-90-8
Hydrogen fluoride	7664-39-3
Hydrogen sulphide	7783-06-4
Hydroquinone [2]	123-31-9
Iron pentacarbonyl	13463-40-6
Isobutyraldehyde	78-84-2
Isophorone diisocyanate	4098-71-9
Isoprene	78-79-5
Isopropyl alcohol	67-63-0
p,p'-Isopropylidenediphenol	80-05-7
Isosafrole	120-58-1
Lead [6]	*
Lithium carbonate	554-13-2
Maleic anhydride	108-31-6
Manganese [6]	*
2-Mercaptobenzothiazole	149-30-4
Methanol	67-56-1
2-Methoxyethanol	109-86-4
2-Methoxyethyl acetate	110-49-6
Methyl acrylate	96-33-3
Methyl *tert*-butyl ether	1634-04-4
p,p'-Methylene*bis*(2-chloroaniline)	101-14-4
1,1-Methylene*bis*-(4-isocyanatocyclohexane)	5124-30-1
Methylene*bis*(phenylisocyanate)	101-68-8
p,p'-Methylenedianiline	101-77-9
Methyl ethyl ketone	78-93-3
Methyl iodide	74-88-4
Methyl isobutyl ketone	108-10-1
Methyl methacrylate	80-62-6
N-Methylolacrylamide	924-42-5
2-Methylpyridine	109-06-8
N-Methyl-2-pyrrolidone	872-50-4
Michler's ketone [2]	90-94-8
Molybdenum trioxide	1313-27-5
Naphthalene	91-20-3
Nickel [6]	*
Nitrate ion [13]	*
Nitric acid	7697-37-2
Nitrilotriacetic acid [2]	139-13-9
p-Nitroaniline	100-01-6
Nitrobenzene	98-95-3
Nitroglycerin	55-63-0
p-Nitrophenol [2]	100-02-7
2-Nitropropane	79-46-9
N-Nitrosodiphenylamine	86-30-6
Nonylphenol	104-40-5
Nonylphenol hepta(oxyethylene) ethanol	27177-05-5
Nonylphenol, industrial	84852-15-3
Nonylphenol nona(oxyethylene) ethanol	27177-08-8
n-Nonylphenol [8]	25154-52-3

NAME	CAS No.[1]
Nonylphenol polyethylene glycol ether	9016-45-9
p-Nonylphenol polyethylene glycol ether	26027-38-3
Nonylphenoxy ethanol	27986-36-3
2-(*p*-Nonylphenoxy) ethanol	104-35-8
2-(2-(*p*-Nonylphenoxy)ethoxy) ethanol	20427-84-3
2-(2-(2-(2-(*p*-Nonylphenoxy) ethoxy)ethoxy)ethoxy) ethanol	7311-27-5
4-*tert*-octylphenol	**140-66-9**
Oxirane, methyl-, polymer with oxirane, mono(nonylphenyl) ether	**37251-69-7**
Paraldehyde	123-63-7
Pentachloroethane	76-01-7
Peracetic acid [2]	79-21-0
Phenol [2]	108-95-2
p-Phenylenediamine [2]	106-50-3
o-Phenylphenol [2]	90-43-7
Phosgene	75-44-5
Phosphoric acid	7664-38-2
Phosphorus [14]	7723-14-0
Phthalic anhydride	85-44-9
Polymeric diphenylmethane diisocyanate	**9016-87-9**
Potassium bromate	7758-01-2
Propargyl alcohol	107-19-7
Propionaldehyde	123-38-6
Propylene	115-07-1
Propylene oxide	75-56-9
Pyridine [2]	110-86-1
Quinoline [2]	91-22-5
p-Quinone	106-51-4
Safrole	94-59-7
Selenium [6]	*
Silver [6]	*
Sodium fluoride	7681-49-4
Sodium nitrite	7632-00-0
Styrene	100-42-5
Styrene oxide	96-09-3
Sulphur hexafluoride	2551-62-4
Sulphuric acid	7664-93-9
1,1,1,2-Tetrachloroethane	630-20-6
1,1,2,2-Tetrachloroethane	79-34-5
Tetrachloroethylene	127-18-4
Tetracycline hydrochloride	64-75-5
Tetraethyl lead	78-00-2
Thiourea	62-56-6
Thorium dioxide	1314-20-1
Titanium tetrachloride	7550-45-0
Toluene	108-88-3
Toluene-2,4-diisocyanate	584-84-9
Toluene-2,6-diisocyanate	91-08-7
Toluenediisocyanate [8]	26471-62-5
1,2,4-Trichlorobenzene	120-82-1
1,1,2-Trichloroethane	79-00-5
Trichloroethylene	79-01-6
Triethylamine	121-44-8
1,2,4-Trimethylbenzene	95-63-6
2,2,4-Trimethylhexamethylene diisocyanate	16938-22-0
2,4,4-Trimethylhexamethylene diisocyanate	15646-96-5
Vanadium [3]	7440-62-2
Vinyl acetate	108-05-4
Vinyl chloride	75-01-4
Vinylidene chloride	75-35-4
Xylene [8,15]	1330-20-7
Zinc [6]	*

* No single CAS number applies to this NPRI listing.

1 CAS Registry Number denotes the Chemical Abstracts Service Registry Number, as appropriate.

2 "and its salts" – The CAS number corresponds to the weak acid or base. However, the NPRI listing includes the salts of these weak acids and bases. When calculating the weight of these substances and their salts, use the molecular weight of the acid or base, not the total weight of the salt.

3 "fume or dust"

4 "fibrous forms"

5 "Ammonia (total)" means the total of both of ammonia (NH_3 – CAS No. 7664-41-7) and the ammonium ion (NH_4^+) in solution.

6 "and its compounds"

7 "friable form"

8 "mixed isomers"

9 "ionic"

10 The isomers include, but are not necessarily limited to, HCFC-122 (CAS No. 354-21-2).

11 The isomers include, but are not necessarily limited to, HCFC-123 (CAS No. 306-83-2) and HCFC 123a (CAS No. 90454-18-5).

12 The isomers include, but are not necessarily limited to, HCFC 124 (CAS No. 2837-89-0), and HCFC 124a (CAS No. 354-25-6).

13 "in solution at a pH of 6.0 or greater"

14 "yellow or white"

15 This listing includes the individual isomers of xylene: *m*-xylene (CAS No. 108-38-3), *o*-xylene (CAS No. 95-47-6) and *p*-xylene (CAS No. 106-42-3).

Schedule 1, Part 2, Substances

NAME	CAS No.[1]
Mercury [6,16]	*

16 The reporting requirements for mercury have changed for the 2000 reporting year.

Schedule 1, Part 3, Substances

NAME	CAS No.[1]	NAME	CAS No.[1]
Benzo(a)anthracene	56-55-3	Dibenzo(a,h)anthracene	53-70-3
Benzo(a)phenanthrene	218-01-9	Dibenzo(a,i)pyrene	189-55-9
Benzo(a)pyrene	50-32-8	7H-Dibenzo(c,g)carbazole	194-59-2
Benzo(b)fluoranthene	205-99-2	Fluoranthene	206-44-0
Benzo(e)pyrene	192-97-2	Indeno(1,2,3-c,d)pyrene	193-39-5
Benzo(g,h,i)perylene	191-24-2	Perylene	198-55-0
Benzo(j)fluoranthene	205-82-3	Phenanthrene	85-01-8
Benzo(k)fluoranthene	207-08-9	Pyrene	129-00-0
Dibenz(a,j)acridine	224-42-0		

Schedule 1, Part 4, Substances

NAME	CAS No.[1]	NAME	CAS No.[1]
Hexachlorobenzene	118-74-1	Polychlorinated dibenzo-*p*-dioxins and polychlorinated dibenzofurans [17]	*

17 This class of substances is restricted to the following congeners:
2,3,7,8-Tetrachlorodibenzo-*p*-dioxin (1746-01-6);
1,2,3,7,8-Pentachlorodibenzo-*p*-dioxin (40321-76-4);
1,2,3,4,7,8-Hexachlorodibenzo-*p*-dioxin (39227-28-6);
1,2,3,7,8,9-Hexachlorodibenzo-*p*-dioxin (19408-74-3);
1,2,3,6,7,8-Hexachlorodibenzo-*p*-dioxin (57653-85-7);
1,2,3,4,6,7,8-Heptachlorodibenzo-*p*-dioxin (35822-46-9);
Octachlorodibenzo-*p*-dioxin (3268-87-9);
2,3,7,8-Tetrachlorodibenzofuran (51207-31-9);
2,3,4,7,8-Pentachlorodibenzofuran (57117-31-4);
1,2,3,7,8-Pentachlorodibenzofuran (57117-41-6);
1,2,3,4,7,8-Hexachlorodibenzofuran (70648-26-9);
1,2,3,7,8,9-Hexachlorodibenzofuran (72918-21-9);
1,2,3,6,7,8-Hexachlorodibenzofuran (57117-44-9);
2,3,4,6,7,8-Hexachlorodibenzofuran (60851-34-5);
1,2,3,4,6,7,8-Heptachlorodibenzofuran (67562-39-4);
1,2,3,4,7,8,9-Heptachlorodibenzofuran (55673-89-7); and
Octachlorodibenzofuran (39001-02-0).

Appendix 2 — NPRI Substances Listed by Chemical Abstracts Service Registry Number

NOTE: The substances added to the NPRI on December 25, 1999, are in bold lettering.

NAME	CAS NO.[1]
Ammonia (total) [2]	*
Antimony [3]	*
Arsenic [3]	*
Cadmium [3]	*
Chromium [3]	*
Cobalt [3]	*
Copper [3]	*
Cyanides [4]	*
Lead [3]	*
Manganese [3]	*
Mercury [3,5]	*
Nickel [3]	*
Nitrate ion [6]	*
Polychlorinated dibenzo-*p*-dioxins and polychlorinated dibenzofurans [7]	*
Selenium [3]	*
Silver [3]	*
Zinc [3]	*
Formaldehyde	50-00-0
Benzo(a)pyrene	**50-32-8**
Dibenzo(a,h)anthracene	**53-70-3**
Nitroglycerin	55-63-0
Carbon tetrachloride	56-23-5
Benzo(a)anthracene	**56-55-3**
Aniline [8]	62-53-3
Thiourea	62-56-6
Formic acid	64-18-6
Diethyl sulphate	64-67-5
Tetracycline hydrochloride	64-75-5
Methanol	67-56-1
Isopropyl alcohol	67-63-0
Chloroform	67-66-3
Hexachloroethane	67-72-1
Hexachlorophene	70-30-4
n-Butyl alcohol	71-36-3
Benzene	71-43-2
Bromomethane	74-83-9
Ethylene	74-85-1
Chloromethane	74-87-3
Methyl iodide	74-88-4
Hydrogen cyanide	74-90-8
Chloroethane	75-00-3
Vinyl chloride	75-01-4
Acetonitrile	75-05-8
Acetaldehyde	75-07-0
Dichloromethane	75-09-2
Carbon disulphide	75-15-0
Ethylene oxide	75-21-8
Vinylidene chloride	75-35-4
Phosgene	75-44-5
HCFC-22	75-45-6
Propylene oxide	75-56-9
Halon 1301	75-63-8
tert-Butyl alcohol	75-65-0
HCFC-142b	75-68-3
CFC-11	75-69-4
CFC-12	75-71-8
CFC-13	75-72-9
Pentachloroethane	76-01-7
CFC-114	76-14-2
CFC-115	76-15-3
Hexachlorocyclopentadiene	77-47-4
Dicyclopentadiene	77-73-6
Dimethyl sulphate	77-78-1
Tetraethyl lead	78-00-2
Isoprene	78-79-5
i-Butyl alcohol	78-83-1
Isobutyraldehyde	78-84-2
1,2-Dichloropropane	78-87-5
sec-Butyl alcohol	78-92-2
Methyl ethyl ketone	78-93-3
1,1,2-Trichloroethane	79-00-5
Trichloroethylene	79-01-6
Acrylamide	79-06-1
Acrylic acid [8]	79-10-7
Chloroacetic acid [8]	79-11-8
Peracetic acid [8]	79-21-0
1,1,2,2-Tetrachloroethane	79-34-5
2-Nitropropane	79-46-9
p,p'-Isopropylidenediphenol	80-05-7
Cumene hydroperoxide	80-15-9
Methyl methacrylate	80-62-6
C.I. Food Red 15	81-88-9
Diethyl phthalate	84-66-2
Dibutyl phthalate	84-74-2
Phenanthrene	**85-01-8**
Phthalic anhydride	85-44-9
Butyl benzyl phthalate	85-68-7
N-Nitrosodiphenylamine	86-30-6
o-Phenylphenol [8]	90-43-7
Michler's ketone [8]	90-94-8
Toluene-2,6-diisocyanate	91-08-7
Naphthalene	91-20-3
Quinoline [8]	91-22-5
Biphenyl	92-52-4
Benzoyl peroxide	94-36-0
Safrole	94-59-7
o-Cresol [8]	95-48-7
o-Dichlorobenzene	95-50-1
1,2,4-Trimethylbenzene	95-63-6
2,4-Diaminotoluene [8]	95-80-7
Styrene oxide	96-09-3
Methyl acrylate	96-33-3
Ethylene thiourea	96-45-7

NAME	CAS NO.[1]	NAME	CAS NO.[1]
Cumene	98-82-8	1,2,4-Trichlorobenzene	120-82-1
Acetophenone	98-86-2	2,4-Dichlorophenol [8]	120-83-2
Benzoyl chloride	98-88-4	2,4-Dinitrotoluene	121-14-2
Nitrobenzene	98-95-3	Triethylamine	121-44-8
p-Nitroaniline	100-01-6	N,N-Dimethylaniline [8]	121-69-7
p-Nitrophenol [8]	100-02-7	Diphenylamine	122-39-4
Ethylbenzene	100-41-4	Hydroquinone [8]	123-31-9
Styrene	100-42-5	Propionaldehyde	123-38-6
Benzyl chloride	100-44-7	Paraldehyde	123-63-7
p,p'-Methylene*bis*(2-chloroaniline)	101-14-4	Butyraldehyde	123-72-8
Methylene*bis*(phenylisocyanate)	101-68-8	1,4-Dioxane	123-91-1
p,p'-Methylenedianiline	101-77-9	Dimethylamine	124-40-3
Bis(2-ethylhexyl) adipate	103-23-1	Tetrachloroethylene	127-18-4
2-(*p*-Nonylphenoxy) ethanol	104-35-8	2,6-Di-*t*-butyl-4-methylphenol	128-37-0
Nonylphenol	104-40-5	**Pyrene**	**129-00-0**
p-Cresol 8	106-44-5	Dimethyl phthalate	131-11-3
p-Dichlorobenzene	106-46-7	Nitrilotriacetic acid [8]	139-13-9
p-Phenylenediamine [8]	106-50-3	**4-*tert*-octylphenol**	**140-66-9**
p-Quinone	106-51-4	Ethyl acrylate	140-88-5
1,2-Butylene oxide	106-88-7	Butyl acrylate	141-32-2
Epichlorohydrin	106-89-8	2-Mercaptobenzothiazole	149-30-4
1,3-Butadiene	106-99-0	Calcium cyanamide	156-62-7
Acrolein	**107-02-8**	**Dibenzo(a,i)pyrene**	**189-55-9**
1-Bromo-2-chloroethane	107-04-0	**Benzo(g,h,j)perylene**	**191-24-2**
Allyl chloride	107-05-1	**Benzo(e)pyrene**	**192-97-2**
1,2-Dichloroethane	107-06-2	**Indeno(1,2,3-c,d)pyrene**	**193-39-5**
Acrylonitrile	107-13-1	**7H-Dibenzo(c,g)carbazole**	**194-59-2**
Allyl alcohol	107-18-6	**Perylene**	**198-55-0**
Propargyl alcohol	107-19-7	**Benzo(j)fluoranthene**	**205-82-3**
Ethylene glycol	107-21-1	**Benzo(b)fluoranthene**	**205-99-2**
Vinyl acetate	108-05-4	**Fluoranthene**	**206-44-0**
Methyl isobutyl ketone	108-10-1	**Benzo(k)fluoranthene**	**207-08-9**
Maleic anhydride	108-31-6	**Benzo(a)phenanthrene**	**218-01-9**
m-Cresol [8]	108-39-4	**Dibenz(a,j)acridine**	**224-42-0**
Toluene	108-88-3	Hydrazine [8]	302-01-2
Chlorobenzene	108-90-7	Halon 1211	353-59-3
Cyclohexanol	108-93-0	4,6-Dinitro-*o*-cresol [8]	534-52-1
Phenol [8]	108-95-2	Ethyl chloroformate	541-41-3
2-Methylpyridine	109-06-8	3-Chloropropionitrile	542-76-7
2-Methoxyethanol	109-86-4	Lithium carbonate	554-13-2
2-Methoxyethyl acetate	110-49-6	3-Chloro-2-methyl-1-propene	563-47-3
n-Hexane	110-54-3	C.I. Basic Green 4	569-64-2
2-Ethoxyethanol	110-80-5	Toluene-2,4-diisocyanate	584-84-9
Cyclohexane	110-82-7	2,6-Dinitrotoluene	606-20-2
Pyridine [8]	110-86-1	3,3'-Dichlorobenzidine dihydrochloride	612-83-9
2-Ethoxyethyl acetate	111-15-9		
Diethanolamine [8]	111-42-2	1,1,1,2-Tetrachloroethane	630-20-6
2-Butoxyethanol	111-76-2	C.I. Solvent Yellow 14	842-07-9
Propylene	115-07-1	N-Methyl-2-pyrrolidone	872-50-4
Chlorendic acid	115-28-6	N-Methylolacrylamide	924-42-5
Bis(2-ethylhexyl) phthalate	117-81-7	C.I. Basic Red 1	989-38-8
Di-*n*-octyl phthalate	117-84-0	Decabromodiphenyl oxide	1163-19-5
Hexachlorobenzene	**118-74-1**	Dimethyl phenol	1300-71-6
Anthracene	120-12-7	Molybdenum trioxide	1313-27-5
Isosafrole	120-58-1	Thorium dioxide	1314-20-1
Catechol	120-80-9	Cresol [8,9]	1319-77-3

NAME	CAS NO.[1]
Xylene [9,10]	1330-20-7
Asbestos [11]	1332-21-4
Aluminum oxide [12]	1344-28-1
Methyl *tert*-butyl ether	1634-04-4
HCFC-141b	1717-00-6
Sulphur hexafluoride	2551-62-4
C.I. Disperse Yellow 3	2832-40-8
C.I. Solvent Orange 7	3118-97-6
Isophorone diisocyanate	4098-71-9
Crotonaldehyde	4170-30-3
C.I. Acid Green 3	4680-78-8
1,1-Methylene*bis*-(4-isocyanatocyclohexane)	5124-30-1
2-(2-(2-(2-(*p*-Nonylphenoxy) ethoxy)ethoxy)ethoxy) ethanol	7311-27-5
Aluminum [13]	7429-90-5
Vanadium [13]	7440-62-2
Titanium tetrachloride	7550-45-0
Sodium nitrite	7632-00-0
Boron trifluoride	7637-07-2
Hydrochloric acid	7647-01-0
Phosphoric acid	7664-38-2
Hydrogen fluoride	7664-39-3
Sulphuric acid	7664-93-9
Sodium fluoride	7681-49-4
Nitric acid	7697-37-2
Phosphorus [14]	7723-14-0
Bromine	7726-95-6
Potassium bromate	7758-01-2
Fluorine	7782-41-4
Chlorine	7782-50-5
Hydrogen sulphide	7783-06-4
Calcium fluoride	7789-75-5
Nonylphenol polyethylene glycol ether	9016-45-9
Polymeric diphenylmethane diisocyanate	**9016-87-9**
Chlorine dioxide	10049-04-4
Iron pentacarbonyl	13463-40-6
2,4,4-Trimethylhexamethylene diisocyanate	15646-96-5
2,2,4-Trimethylhexamethylene diisocyanate	16938-22-0
2-(2-(*p*-Nonylphenoxy)ethoxy) ethanol	20427-84-3
n-Nonylphenol [9]	25154-52-3
Dinitrotoluene [9]	25321-14-6
p-Nonylphenol polyethylene glycol ether	26027-38-3
Toluenediisocyanate [9]	26471-62-5
Nonylphenol hepta(oxyethylene) ethanol	27177-05-5
Nonylphenol nona(oxyethylene) ethanol	27177-08-8
Nonylphenoxy ethanol	27986-36-3
C.I. Direct Blue 218	28407-37-6
Ethoxynonyl benzene	28679-13-2
HCFC-123 and all isomers [15]	34077-87-7
Oxirane, methyl-, polymer with oxirane, mono(nonylphenyl) ether	**37251-69-7**
HCFC-122 and all isomers [16]	41834-16-6
HCFC 124 and all isomers [17]	63938-10-3
Alkanes, C_{6-18}, chloro	68920-70-7
Nonylphenol, industrial	84852-15-3
Alkanes, C_{10-13}, chloro	85535-84-8

* No single CAS number applies to this NPRI listing.

1 CAS Registry Number denotes the Chemical Abstracts Service Registry Number, as appropriate.

2 "Ammonia (total)" means the total of both of ammonia (NH_3 – CAS No. 7664-41-7) and the ammonium ion (NH_4^+) in solution.

3 "and its compounds"

4 "ionic"

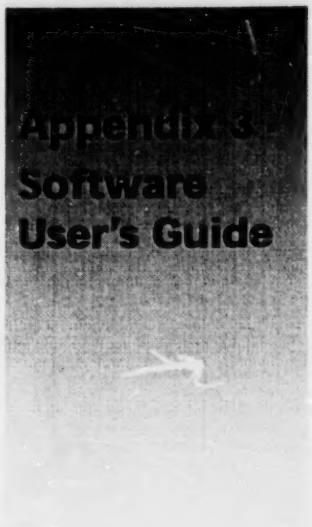
5 The reporting requirements for mercury have changed for the 2000 reporting year.

6 "in solution at a pH of 6.0 or greater"

7 This class of substances is restricted to the following congeners:
2,3,7,8-Tetrachlorodibenzo-*p*-dioxin (1746-01-6);
1,2,3,7,8-Pentachlorodibenzo-*p*-dioxin (40321-76-4);
1,2,3,4,7,8-Hexachlorodibenzo-*p*-dioxin (39227-28-6);
1,2,3,7,8,9-Hexachlorodibenzo-*p*-dioxin (19408-74-3);
1,2,3,6,7,8-Hexachlorodibenzo-*p*-dioxin (57653-85-7);
1,2,3,4,6,7,8-Heptachlorodibenzo-*p*-dioxin (35822-46-9);
Octachlorodibenzo-*p*-dioxin (3268-87-9);
2,3,7,8-Tetrachlorodibenzofuran (51207-31-9);
2,3,4,7,8-Pentachlorodibenzofuran (57117-31-4);
1,2,3,7,8-Pentachlorodibenzofuran (57117-41-6);
1,2,3,4,7,8-Hexachlorodibenzofuran (70648-26-9);
1,2,3,7,8,9-Hexachlorodibenzofuran (72918-21-9);
1,2,3,6,7,8-Hexachlorodibenzofuran (57117-44-9);
2,3,4,6,7,8-Hexachlorodibenzofuran (60851-34-5);
1,2,3,4,6,7,8-Heptachlorodibenzofuran (67562-39-4);
1,2,3,4,7,8,9-Heptachlorodibenzofuran (55673-89-7); and
Octachlorodibenzofuran (39001-02-0).

8 "and its salts" – The CAS number corresponds to the weak acid or base. However, the NPRI listing includes the salts of these weak acids and bases. When calculating the weight of these substances and their salts, use the molecular weight of the acid or base, not the total weight of the salt.

9 "mixed isomers"
10 This listing includes the individual isomers of xylene: *m*-xylene (CAS No. 108-38-3), *o*-xylene (CAS No. 95-47-6) and *p*-xylene (CAS No. 106-42-3).
11 "friable form"
12 "fibrous forms"
13 "fume or dust"
14 "yellow or white"
15 The isomers include, but are not necessarily limited to, HCFC-123 (CAS No. 306-83-2) and HCFC 123a (CAS No. 90454-18-5).
16 The isomers include, but are not necessarily limited to, HCFC-122 (CAS No. 354-21-2)
17 The isomers include, but are not necessarily limited to, HCFC 124 (CAS No. 2837-89-0) and HCFC 124a (CAS No. 354-25-6).



NPRI Reporting Software for Windows

Hardware and Software Requirements

The Windows reporting software is a 32-bit application that can only be used on computers running Microsoft Windows. The minimum requirements for using the Windows electronic reporting form are:

- Intel 486 compatible personal computer
- Windows 95, Windows 98 or Windows NT
- CD-ROM drive or a 3.5", high-density disk drive
- a hard disk drive with 20 or more megabytes (Mb) of available space

Installing the Windows Reporting Software

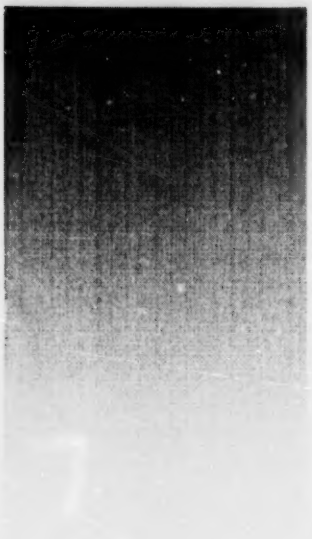
- Start Windows 95/98/NT.
- Insert the NPRI CD-ROM into your CD-ROM drive. The NPRI CD browser will automatically launch if Autorun is enabled on your system. The CD browser will allow you to install the NPRI reporting software, as well as view the NPRI guidance documents.
- If the CD browser does not appear, open the Windows/NT Explorer, select the CD-ROM drive and double-click on the file **Setup.exe**.
- Follow the installation instructions.

Main Menu

The Main Menu is the starting point in completing a report for the NPRI. A typical procedure is to first select "Maintain System Files" and upload the data from your 1999 report. Next, choose "View/Enter/Edit Data" and update the information on reporting facilities, substances and off-site facilities. Finally, choose "Check Errors/Create Report" to export an NPRI report to disk and submit it with a signed Statement of Certification to your regional NPRI office.

OPTIONS

Help
View/Enter/Edit Data
Reports Menu
Maintain System Files
Check Errors/Create Report
Report Additional Substances
Exit



Maintain System Files

From the Main Menu, select "Maintain System Files". The following options are available:

OPTIONS

Help
Upload Data Disks
Clear Database Tables
Change Location of Data Directory
Return

Uploading Data into the 2000 Software

If you have a copy of your 1999 NPRI report on disk, you can upload the data into this year's electronic report form for editing. The 2000 NPRI reports from other facilities can also be uploaded. This feature is useful for company coordinators who wish to combine reports from several facilities on one reporting disk. **The 2000 software does not upload NPRI reports created before 1999.**

Select "Upload Data Disks" to begin the uploading process. Place the report disk containing your 1999 or 2000 data into the computer's disk drive. At the prompt, choose the drive letter and path name of the NPRI data. The Windows software can upload data from any drive or folder that contains a valid NPRI report. A status screen will indicate if the data is for 1999 or 2000 and the program will list the number of facilities, substances and off-site facilities that will be uploaded. While the data are being uploaded, the program will display the number of records transferred and the number of duplicates found. The software will warn you if a duplicate facility is being uploaded and give you the option to:

- overwrite the existing record with the record on disk
- create a new facility with a different NPRI ID
- skip and do not import the record on disk, or
- cancel all further imports.

Clear Database Tables

This feature is designed for those, such as consultants, who report for different facilities. It allows the user to quickly delete all data for a particular reporting year and then upload new data from another disk. **Note: Once deleted, data cannot be recovered.**

Change Location of Data Directory

This is a new feature of the software that allows you to store one or more NPRI reports in different folders. This feature is useful for contractors who prepare reports for different clients. Use the Windows Explorer to create new folders for the NPRI data. Then, use the NPRI software to change the location of the data directory. You have the option of creating a new empty database in the folder or opening an existing database. **Note: This function cannot be used to copy NPRI reports from one folder to another. Use the Windows Explorer to copy the NPRIDATA.MDB database file.**

View/Enter/Edit Data

From the Main Menu select the "View/Enter/Edit Data". From this screen, you can enter all of the information required by the NPRI.

OPTIONS

Help
Reporting Facilities
Substances
Surface Water Bodies
Off-site Facilities
Return

Section 3 of this *Guide* has complete details on what information is required and how to complete these sections. **At any time, you can save the information you have entered or abandon the changes you have made.**

Reporting Facilities

Information identifying the facility is entered in fields A1.0 to A17.0 of the "Reporting Facilities" section. The electronic reporting form allows NPRI reports for more than one facility to be entered. This is useful for company coordinators who are filing NPRI reports for several facilities. The "Facility/Substance Summary" screen provides a concise summary of the on-site releases and off-site transfers. This summary is also available immediately prior to exporting the NPRI report to a disk.

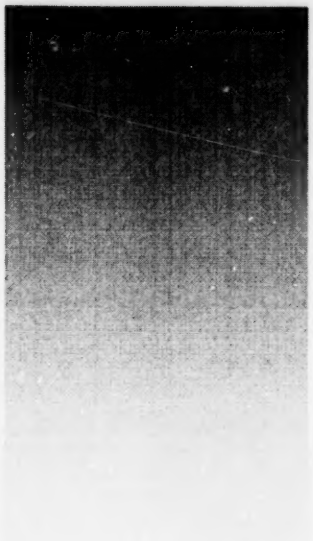
Substances

Information on NPRI substances is entered in fields B1.0 to B40.0 of the "Substances" report. The substance screen lists the facilities and their associated substance reports. Substance reports can be added, modified and deleted. The "Facility/Substance Summary" screen provides a concise summary of the on-site releases and off-site transfers. This summary is also available immediately prior to exporting the NPRI report to a disk.

For each surface water discharge, you must identify the receiving water bodies. The button in the "# of Water Bodies" column shows the number of water bodies receiving the discharge. It displays a "?" if no water bodies have been identified. Select the button to open the "Master Pick-list of Surface Water Bodies" table. Here you can identify the surface water bodies that receive the discharge, as well as the quantity discharged to each surface water body. The software provides a pick-list of standard water body names that is drawn from the NPRI database and the *Gazetteer of Canada*. The pick-list is sorted by province.

You must identify the off-site facilities to which NPRI substances are transferred for disposal (B22.1) or for recycling (B25.1). To do so, select the button in the "# of Off-sites" column of these fields to open the "Master Pick-list of Off-site Facilities" table. The software provides a pick-list of previously-entered off-site facility names.

If the pick-lists described above are incomplete or inaccurate, you can add or edit a surface water body name or an off-site facility. The following two sections describe a more direct way of identifying off-site facilities and water bodies.



Surface Water Bodies

To ensure that water bodies are consistently identified, a list of names was assembled from data in the NPRI and from the *Gazetteer of Canada*. The table has a complete list of water bodies, sorted by province. The entries in this table become part of a pick-list available when in the "Water Bodies" column of field B12.3 of the substances report. The names in this initial list cannot be modified. However, if you cannot find the name of a water body, you can add a new geographic feature to the list. Select "Surface Water Bodies" to open the "Master Pick-list of Surface Water Bodies" table.

Off-site Facilities

This function opens the table "Master Pick-list of Off-site Facilities". To ensure that off-site facilities are consistently identified, a list of facilities was assembled from data in the NPRI. The information for the off-site facilities in this initial list cannot be modified. However, you can add a new off-site facility to the list if you cannot find the name of the facility to which you transferred NPRI substances. The entries in this table become part of a pick-list which is available when in the "# of Off-sites" column of fields B22.1 and B25.1 of the "Substances" report.

Reports Menu

From the Main Menu, select the "Reports" menu. From this screen, you can set printer defaults, print your NPRI report and print a Statement of Certification. **Note, you are not required to submit a printed copy of the NPRI report with your electronic copy.**

OPTIONS

Help
Print Facilities/Substances
Print Surface Water Bodies
Print Off-site Facilities
Print Statement of Certification
Set Printer Defaults
Print Summary Listings
Print Reporting Errors
Return

Print Facilities/Substances

This report provides a detailed listing of all the information in the NPRI report. A series of check boxes allow you to select the options. By default, the report will list all of the facilities and their substances. The off-site facilities and water bodies **must** be printed separately. You have the option of listing only the facilities without their substances. Or, you can choose to print specific sections of the facility and substance reports. Use the "Print Off-sites/Surface Waters" function (see below) to obtain a list of off-site facilities and water bodies used in the NPRI report.

You may choose to print the report in the "language of entry". This is useful for company coordinators who consolidate NPRI reports from facilities across Canada. It allows those reports completed in English to be printed in English while reports completed in French are printed in French. Or, the report headings can be printed in either French or English; information entered in the report will remain in the language of entry.

Print Surface Waters/Off-sites

This report provides a simple listing of all off-site facilities and all surface water body names used in the NPRI report. In the Windows software, these are two separate reports.

Print Statement of Certification

A brief summary of the NPRI report is printed with the Statement of Certification. It lists the facilities, their substance reports and the total quantities released on site, transferred off site for disposal and recycling. The Statement of Certification includes the name and address of the company official identified in fields A16.0 and A17.0. **A signed and dated Statement of Certification must be submitted with the NPRI report.**

Set Printer Defaults

You can either print to a printer ("P") or to a file ("F"). The software can use any printer on your system. However, you can print to a file in cases where the printer is inaccessible. The resulting file is a simple text document which can be edited in Notepad, WordPad or any other word processor. **For best printing results, use a fixed-pitch font such as 10-point Courier or New Courier.**

Check Errors and Create Report

From the Main Menu, select this function to check your NPRI report for errors and to create an NPRI report on disk. The options are:

OPTIONS

Help
Check for Reporting Errors
View/Print Reporting Errors
Copy NPRI Report to Disk
Return

Check for Reporting Errors

This is an essential step. The reporting software will not export an NPRI report to a disk until this function reports that no errors were detected. This function will verify that you have correctly completed all sections of the NPRI report. A status screen will indicate the number of facility and substance records being verified and the number of warnings and errors being found. The reporting software has data-verification features to provide warnings if the reported releases and transfers are unusually large. Warnings, unlike errors, will not prevent the NPRI report from being exported to a disk.

If errors are found, you will be prompted to view the error and warning messages. **Correct the errors reported by the error-check function, and run the "Check for Reporting Errors" function again to clear the previous error codes.** When you receive the message "No Errors Detected", you will be able to copy your NPRI report to a disk.

View/Print Reporting Errors

Use these functions to review the error and warning messages generated by the software. The error and warning messages identify the field where the error occurred and provide a brief description of the error or warning. For example:

YEAR	NPRI ID	COMPANY NAME	CAS NO.	SUBSTANCE	REF.	FIELD NAME
ERROR MESSAGE						
						ERRORS DETECTED
YOU MUST GENERATE A NEW LIST OF POSSIBLE ERRORS AFTER YOUR CORRECTIONS.						
2000	5199	ABC MANUFACTURING	7782-50-5	CHLORINE	B 2.0	NATURE OF ACTIVITIES
SPECIFY EITHER MANUFACTURE, PROCESS OR OTHERWISE USE OF THE SUBSTANCE.						
2000	5199	ABC MANUFACTURING	7782-50-5	CHLORINE	B14.1	REASONS FOR CHANGE
PLEASE SPECIFY EITHER A, B, C, D, E, F, G, H OR I AS A REASON FOR CHANGE.						
2000	5199	ABC MANUFACTURING	7782-50-5	CHLORINE	B30.1	POLLUTION PREVENTION
PLEASE SPECIFY EITHER A, B, C, D, E, F, G, H OR I AS A REASON FOR CHANGE.						

Copy NPRI Report to Disk

You must use the NPRI software to export a report, otherwise the data on the disk cannot be accepted by Environment Canada. This function of the reporting software is not the same as copying files using the Windows Explorer. The software provides a summary of the on-site releases and off-site transfers immediately before exporting your NPRI report to disk. Review the information for accuracy. Ensure that a blank, formatted disk has been inserted into disk drive "A" or "B", or the software will fail.

If either NERM or ARET reporting was enabled (see "Report Additional Substances"), you will be able to create a NERM/ARET report which contains **all** substance reports or an NPRI report which only includes NPRI substance reports. The "Copy NPRI Report to Disk" function can also be used to send reports to a coordinator who can then assemble all reports for a company.

Report Additional Substances

The NPRI report can be used to complete reports for the National Emissions Reduction Masterplan (NERM) of the Canadian Chemical Producers' Association and for the Accelerated Reduction/Elimination of Toxics (ARET) program of Environment Canada. From the "Main Menu", select this function to enable reporting of substances on the NERM and ARET substances lists. The pick-lists in field B1.0 will include the NERM and ARET substances in addition to the NPRI substances. Indicators in field B1.4 will show if the substance is a NERM or ARET substance.

If either NERM or ARET reporting was enabled, you will be able to create a NERM/ARET report which contains **all** substance reports or an NPRI report which only includes NPRI substance reports.

Submitting your Report to Environment Canada

Send a copy of your report on disk and the "Statement of Certification" signed by an official of the company to your regional NPRI office, postmarked or courier-dated **no later than June 1, 2001**. Keep a copy of your data on disk for your records and for uploading into next year's software.

Appendix 4 - Four-digit North American Industry Classification System (NAICS) Codes

11	**Agriculture, Forestry, Fishing & Hunting**
111	Crop Production
1111	Oilseed & Grain Farming
1112	Vegetable & Melon Farming
1113	Fruit & Tree Nut Farming
1114	Greenhouse, Nursery & Floriculture Production
1119	Other Crop Farming
112	Animal Production
1121	Cattle Ranching & Farming
1122	Hog & Pig Farming
1123	Poultry & Egg Production
1124	Sheep & Goat Farming
1125	Animal Aquaculture
1129	Other Animal Production
113	Forestry & Logging
1131	Timber Tract Operations
1132	Forest Nurseries & Gathering Forest Products
1133	Logging
114	Fishing, Hunting & Trapping
1141	Fishing
1142	Hunting & Trapping
115	Support Activities for Agriculture & Forestry
1151	Support Activities for Crop Production
1152	Support Activities for Animal Production
1153	Support Activities for Forestry
21	**Mining & Oil & Gas Extraction**
211	Oil & Gas Extraction
2111	Oil & Gas Extraction
212	Mining (exc. Oil & Gas)
2121	Coal Mining
2122	Metal Ore Mining
2123	Non-Metallic Mineral Mining & Quarrying
213	Support Act.- Mining & Oil & Gas Extraction
2131	Support Act.- Mining & Oil & Gas Extraction
22	**Utilities**
221	Utilities
2211	Electricity Generation, Transmission & Dist.
2212	Natural Gas Distribution
2213	Water, Sewage & Other Systems
23	**Construction**
231	Prime Contracting
2311	Land Subdivision & Land Development
2312	Building Construction
2313	Engineering Construction
2314	Construction Management
232	Trade Contracting
2321	Site Preparation Work
2322	Building Structure Work
2323	Building Exterior Finishing Work
2324	Building Interior Finishing Work
2325	Building Equipment Installation
2329	Other Special Trade Contracting
31-33	**Manufacturing**
311	Food Mfg.
3111	Animal Food Mfg.
3112	Grain & Oilseed Milling
3113	Sugar & Confectionery Product Mfg.
3114	Fruit & Veg. Preserving & Specialty Food Mfg.
3115	Dairy Product Mfg.
3116	Meat Product Mfg.
3117	Seafood Product Preparation & Packaging
3118	Bakeries & Tortilla Mfg.
3119	Other Food Mfg.
312	Beverage & Tobacco Product Mfg.
3121	Beverage Mfg.
3122	Tobacco Mfg.
313	Textile Mills
3131	Fibre, Yarn & Thread Mills
3132	Fabric Mills
3133	Textile & Fabric Finishing & Fabric Coating
314	Textile Product Mills
3141	Textile Furnishings Mills
3149	Other Textile Product Mills
315	Clothing Mfg.
3151	Clothing Knitting Mills
3152	Cut & Sew Clothing Mfg.
3159	Clothing Accessories & Other Clothing Mfg.
316	Leather & Allied Product Mfg.
3161	Leather & Hide Tanning & Finishing
3162	Footwear Mfg.
3169	Other Leather & Allied Product Mfg.
321	Wood Product Mfg.
3211	Sawmills & Wood Preservation
3212	Veneer, Plywood & Eng'rd Wood Product Mfg.
3219	Other Wood Product Mfg.
322	Paper Mfg.
3221	Pulp, Paper & Paperboard Mills
3222	Converted Paper Product Mfg.
323	Printing & Related Support Activities
3231	Printing & Related Support Activities
324	Petroleum & Coal Products Mfg.
3241	Petroleum & Coal Products Mfg.
325	Chemical Mfg.
3251	Basic Chemical Mfg.
3252	Resin, Synth. Rubber, & Fibre & Filament Mfg.
3253	Pesticide, Fertilizer & Other Agr. Chem. Mfg.
3254	Pharmaceutical & Medicine Mfg.
3255	Paint, Coating & Adhesive Mfg.
3256	Soap, Cleaning Compound & Toilet Prep. Mfg.
3259	Other Chemical Product Mfg.
326	Plastics & Rubber Products Mfg.

3261	Plastic Product Mfg.
3262	Rubber Product Mfg.
327	Non-Metallic Mineral Product Mfg.
3271	Clay Product & Refractory Mfg.
3272	Glass & Glass Product Mfg.
3273	Cement & Concrete Product Mfg.
3274	Lime & Gypsum Product Mfg.
3279	Other Non-Metallic Mineral Product Mfg.
331	Primary Metal Mfg.
3311	Iron & Steel Mills & Ferro-Alloy Mfg.
3312	Steel Product Mfg. from Purchased Steel
3313	Alumina & Aluminum Production & Processing
3314	Non-Ferrous (exc. Al) Production & Processing
3315	Foundries
332	Fabricated Metal Product Mfg.
3321	Forging & Stamping
3322	Cutlery & Hand Tool Mfg.
3323	Architectural & Structural Metals Mfg.
3324	Boiler, Tank & Shipping Container Mfg.
3325	Hardware Mfg.
3326	Spring & Wire Product Mfg.
3327	Machine Shops, Turned Product & Related Mfg.
3328	Coating, Engraving & Heat Treating Activities
3329	Other Fabricated Metal Product Mfg.
333	Machinery Mfg.
3331	Agr., Construction & Mining Machinery Mfg.
3332	Industrial Machinery Mfg.
3333	Commercial & Service Industry Machinery Mfg.
3334	Ventilation, Heating, AC & Refrig. Equip. Mfg
3335	Metalworking Machinery Mfg.
3336	Engine, Turbine & Power Transmission Mfg.
3339	Other General-Purpose Machinery Mfg.
334	Computer & Electronic Product Mfg.
3341	Computer & Peripheral Equipment Mfg.
3342	Communications Equipment Mfg.
3343	Audio & Video Equipment Mfg.
3344	Semiconductor & Electronic Component Mfg.
3345	Instruments Mfg.
3346	Mfg. & Reproducing Magnetic & Optical Media
335	Electric Equip., Appliance & Component Mfg.
3351	Electric Lighting Equipment Mfg.
3352	Household Appliance Mfg.
3353	Electrical Equipment Mfg.
3359	Other Electrical Equipment & Component Mfg.
336	Transportation Equipment Mfg.
3361	Motor Vehicle Mfg.
3362	Motor Vehicle Body & Trailer Mfg.
3363	Motor Vehicle Parts Mfg.
3364	Aerospace Product & Parts Mfg.
3365	Railroad Rolling Stock Mfg.
3366	Ship & Boat Building
3369	Other Transportation Equipment Mfg.
337	Furniture & Related Product Mfg.
3371	Household & Inst. Furniture & Cabinet Mfg.
3372	Office Furniture (including Fixtures) Mfg.
3379	Other Furniture-Related Product Mfg.
339	Miscellaneous Mfg.
3391	Medical Equipment & Supplies Mfg.
3399	Other Miscellaneous Mfg.
41	**Wholesale Trade**
411	Farm Product Whl.
4111	Farm Product Whl.
412	Petroleum Product Whl.
4121	Petroleum Product Whl.
413	Food, Beverage & Tobacco Whl.
4131	Food Whl.
4132	Beverage Whl.
4133	Cigarette & Tobacco Product Whl.
414	Personal & Household Goods Whl.
4141	Textile, Clothing & Footwear Whl.
4142	Home Ent. Equip & Hhld. Appliance Whl.
4143	Home Furnishings Whl.
4144	Personal Goods Whl.
4145	Pharmaceuticals, Toiletries & Related Whl.
415	Motor Vehicle & Parts Whl.
4151	Motor Vehicle Whl.
4152	New Motor Vehicle Parts & Accessories Whl.
4153	Used Motor Vehicle Parts & Accessories Whl.
416	Building Material & Supplies Whl.
4161	Electrical, Plumbing, Heating & AC Equip. Whl
4162	Metal Service Centres
4163	Lumber & Other Building Supplies Whl.
417	Machinery, Equipment & Supplies Whl.
4171	Farm, Lawn & Garden Machinery & Equip. Whl.
4172	Construction, Forestry & Ind'l Machinery Whl.
4173	Computer & Communications Equipment Whl.
4179	Other Machinery, Equipment & Supplies Whl.
418	Miscellaneous Wholesaler-Distributors
4181	Recyclable Material Whl.
4182	Paper & Disposable Plastic Product Whl.
4183	Agricultural Supplies Whl.
4184	Chemical (exc. Agr.) & Allied Product Whl.
4189	Other Misc. Whl.
419	Wholesale Agents & Brokers
4191	Wholesale Agents & Brokers

44-45	**Retail Trade**
441	Motor Vehicle and Parts Dealers
4411	Automobile Dealers
4412	Other Motor Vehicle Dealers
4413	Automotive Parts, Accessories & Tire Stores
442	Furniture & Home Furnishings Stores
4421	Furniture Stores
4422	Home Furnishings Stores
443	Electronics & Appliance Stores
4431	Electronics & Appliance Stores
444	Building Material & Garden Equipment Dealers
4441	Building Material & Supplies Dealers
4442	Lawn & Garden Equipment & Supplies Stores
445	Food & Beverage Stores
4451	Grocery Stores
4452	Specialty Food Stores
4453	Beer, Wine & Liquor Stores
446	Health & Personal Care Stores
4461	Health & Personal Care Stores
447	Gasoline Stations
4471	Gasoline Stations
448	Clothing & Clothing Accessories Stores
4481	Clothing Stores
4482	Shoe Stores
4483	Jewellery, Luggage & Leather Goods Stores
451	Sporting Goods, Hobby, Book & Music Stores
4511	Sport, Hobby & Musical Instrument Stores
4512	Book, Periodical & Music Stores
452	General Merchandise Stores
4521	Department Stores
4529	Other General Merchandise Stores
453	Misc. Store Retailers
4531	Florists
4532	Office Supply, Stationery & Gift Stores
4533	Used Merchandise Stores
4539	Other Misc. Store Retailers
454	Non-Store Retailers
4541	Electronic Shopping & Mail-Order Houses
4542	Vending Machine Operators
4543	Direct Selling Establishments
48-49	**Transportation & Warehousing**
481	Air Transportation
4811	Scheduled Air Transportation
4812	Non-Scheduled Air Transportation
482	Rail Transportation
4821	Rail Transportation
483	Water Transportation
4831	Deep Water Transportation
4832	Inland Water Transportation
484	Truck Transportation
4841	General Freight Trucking
4842	Specialized Freight Trucking
485	Transit & Ground Passenger Transportation
4851	Urban Transit Systems
4852	Interurban & Rural Bus Transportation
4853	Taxi & Limousine Service
4854	School & Employee Bus Transportation
4855	Charter Bus Industry
4859	Other Transit & Ground Passenger Transport
486	Pipeline Transportation
4861	Pipeline Transportation of Crude Oil
4862	Pipeline Transportation of Natural Gas
4869	Other Pipeline Transportation
487	Scenic & Sightseeing Transportation
4871	Scenic & Sightseeing Transportation, Land
4872	Scenic & Sightseeing Transportation, Water
4879	Scenic & Sightseeing Transportation, Other
488	Support Activities for Transportation
4881	Support Activities for Air Transportation
4882	Support Activities for Rail Transportation
4883	Support Activities for Water Transportation
4884	Support Activities for Road Transportation
4885	Freight Transportation Arrangement
4889	Other Support Activities for Transportation
491	Postal Service
4911	Postal Service
492	Couriers & Messengers
4921	Couriers
4922	Local Messengers & Local Delivery
493	Warehousing & Storage
4931	Warehousing & Storage
51	**Information & Cultural Industries**
511	Publishing Industries
5111	Newspaper, Periodical, Book & DB Publishers
5112	Software Publishers
512	Motion Picture & Sound Recording Industries
5121	Motion Picture & Video Industries
5122	Sound Recording Industries
513	Broadcasting & Telecommunications
5131	Radio & Television Broadcasting
5132	Pay TV, Specialty TV & Program Distribution
5133	Telecommunications
514	Information & Data Processing Services
5141	Information Services
5142	Data Processing Services
52	**Finance & Insurance**
521	Monetary Authorities - Central Bank
5211	Monetary Authorities - Central Bank
522	Credit Intermediation & Related Activities
5221	Depository Credit Intermediation
5222	Non-Depository Credit Intermediation
5223	Activities Related to Credit Intermediation
523	Securities, Commodity Contracts & Related

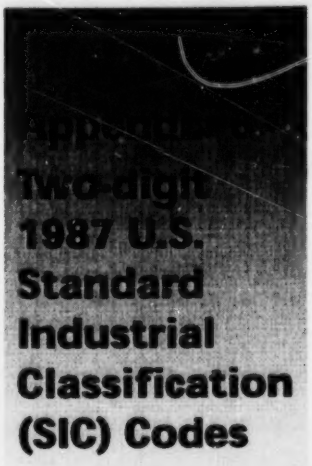
5231	Securities & Commodity Contracts Intermed.
5232	Securities & Commodity Exchanges
5239	Other Financial Investment Activities
524	Insurance Carriers & Related Activities
5241	Insurance Carriers
5242	Agencies, Brokerages & Other Insurance Act.
526	Funds and Other Financial Vehicles
5261	Pension Funds
5269	Other Funds and Financial Vehicles
53	**Real Estate & Rental & Leasing**
531	Real Estate
5311	Lessors of Real Estate
5312	Offices of Real Estate Agents & Brokers
5313	Activities Related to Real Estate
532	Rental & Leasing Services
5321	Automotive Equipment Rental & Leasing
5322	Consumer Goods Rental
5323	General Rental Centres
5324	Commercial & Ind'l Machinery Rental & Leasing
533	Lessors of Non-Financial Intangible Assets
5331	Lessors of Non-Financial Intangible Assets
54	**Professional, Scientific & Technical Services**
541	Professional, Scientific & Technical Services
5411	Legal Services
5412	Accounting, Tax Prep. & Bookkeeping Services
5413	Architectural, Engineering & Related Services
5414	Specialized Design Services
5415	Computer Systems Design & Related Services
5416	Mgmt., Scientific & Technical Consulting Serv.
5417	Scientific R&D Services
5418	Advertising & Related Services
5419	Other Prof., Scientific & Technical Services
55	**Management of Companies & Enterprises**
551	Management of Companies & Enterprises
5511	Management of Companies & Enterprises
56	**Admin., Support, Waste Mgmt & Remed. Services**
561	Administrative & Support Services
5611	Office Administrative Services
5612	Facilities Support Services
5613	Employment Services
5614	Business Support Services
5615	Travel Arrangement & Reservation Services
5616	Investigation & Security Services
5617	Services to Buildings & Dwellings
5619	Other Support Services
562	Waste Management & Remediation Services
5621	Waste Collection
5622	Waste Treatment & Disposal
5629	Remediation & Other Waste Mgmt. Services
61	**Educational Services**
611	Educational Services
6111	Elementary & Secondary Schools
6112	Community Colleges & C.E.G.E.P.s
6113	Universities
6114	Business Schools & Computer & Mgmt. Training
6115	Technical & Trade Schools
6116	Other Schools & Instruction
6117	Educational Support Services
62	**Health Care & Social Assistance**
621	Ambulatory Health Care Services
6211	Offices of Physicians
6212	Offices of Dentists
6213	Offices of Other Health Practitioners
6214	Out-Patient Care Centres
6215	Medical & Diagnostic Laboratories
6216	Home Health Care Services
6219	Other Ambulatory Health Care Services
622	Hospitals
6221	General Medical & Surgical Hospitals
6222	Psychiatric & Substance Abuse Hospitals
6223	Specialty (exc. Psych., etc.) Hospitals
623	Nursing & Residential Care Facilities
6231	Nursing Care Facilities
6232	Res. Developmental Handicap, etc., Facilities
6233	Community Care Facilities for the Elderly
6239	Other Residential Care Facilities
624	Social Assistance
6241	Individual & Family Services
6242	Community Food & Housing & Emerg., etc. Serv.
6243	Vocational Rehabilitation Services
6244	Child Day-Care Services
71	**Arts, Entertainment & Recreation**
711	Performing Arts, Spectator Sports & Related
7111	Performing Arts Companies
7112	Spectator Sports
7113	Promoters of Performing Arts, Sports, etc.
7114	Agents & Managers for Public Figures
7115	Independent Artists, Writers & Performers
712	Heritage Institutions
7121	Heritage Institutions
713	Amusement, Gambling & Recreation Industries
7131	Amusement Parks & Arcades

7132	Gambling Industries
7139	Other Amusement & Recreation Industries
72	**Accommodation & Food Services**
721	Accommodation Services
7211	Traveller Accommodation
7212	RV Parks & Recreational Camps
7213	Rooming & Boarding Houses
722	Food Services & Drinking Places
7221	Full-Service Restaurants
7222	Limited-Service Eating Places
7223	Special Food Services
7224	Drinking Places (Alcoholic Beverages)
81	**Other Services (exc. Public Administration)**
811	Repair and Maintenance
8111	Automotive R&M
8112	Electronic & Precision Equipment R&M
8113	Commercial & Ind'l Mach. & Equip. R&M
8114	Personal & Household Goods R&M
812	Personal & Laundry Services
8121	Personal Care Services
8122	Funeral Services
8123	Dry Cleaning and Laundry Services
8129	Other Personal Services
813	Religious, Grant-Making, Civic & Similar Orgs.
8131	Religious Organizations
8132	Grant-Making & Giving Services
8133	Social Advocacy Organizations
8134	Civic & Social Organizations
8139	Business, Prof., Labour & Other Member. Orgs.
814	Private Households
8141	Private Households
91	**Public Administration**
911	Federal Government Public Administration
9111	Defence Services
9112	Federal Protective Services
9113	Federal Labour, Employment & Immigration Serv.
9114	Foreign Affairs & International Assistance
9119	Other Fed. Government Public Administration
912	Prov. & Territorial Public Administration
9121	Provincial Protective Services
9122	Provincial Labour & Employment Services
9129	Other Prov. & Terr. Public Administration
913	Municipal Public Administration
9131	Municipal Protective Services
9139	Other Municipal Public Administration
914	Aboriginal Public Administration
9141	Aboriginal Public Administration
919	Extra-Territorial Public Administration
9191	Extra-Territorial Public Administration

Appendix 5: Two-digit 1980 Canadian Standard Industrial Classification (SIC) Codes

01	Agricultural Industries
02	Service Industries Incidental to Agriculture
03	Fishing and Trapping Industries
04	Logging Industry
05	Forest Services Industry
06	Mining Industries
07	Crude Petroleum and Natural Gas Industries
08	Quarry and Sand Pit Industries
09	Service Industries Incidental to Mineral Extraction
10	Food Industries
11	Beverage Industries
12	Tobacco Products Industries
15	Rubber Products Industries
16	Plastic Products Industries
17	Leather and Allied Products Industries
18	Primary Textile Industries
19	Textile Products Industries
24	Clothing Industries
25	Wood Industries
26	Furniture and Fixture Industries
27	Paper and Allied Products Industries
28	Printing, Publishing and Allied Industries
29	Primary Metal Industries
30	Fabricated Metal Products Industries (except Machinery and Transportation Equipment Industries)
31	Machinery Industries (except Electrical Machinery)
32	Transportation Equipment Industries
33	Electrical and Electronic Products Industries
35	Non-metallic Mineral Products Industries
36	Refined Petroleum and Coal Products Industries
37	Chemical and Chemical Products Industries
39	Other Manufacturing Industries
40	Building Developing and General Contracting Industries
41	Industrial and Heavy (Engineering) Construction Industries
42	Trade Contracting Industries
44	Service Industries Incidental to Construction
45	Transportation Industries
46	Pipeline Transport Industries
47	Storage and Warehousing Industries
48	Communication Industries
49	Other Utility Industries
50	Farm Products Industries, Wholesale
51	Petroleum Products Industries, Wholesale
52	Food, Beverage, Drug and Tobacco Industries, Wholesale
53	Apparel and Dry Goods Industries, Wholesale
54	Household Goods Industries, Wholesale
55	Motor Vehicle, Parts and Accessories Industries, Wholesale
56	Metals, Hardware, Plumbing, Heating and Building Materials Industries, Wholesale
57	Machinery, Equipment and Supplies, Wholesale
59	Other Products and Industries, Wholesale
60	Food, Beverage and Drug Industries, Retail
61	Shoe, Apparel, Fabric and Yarn Industries, Retail
62	Household Furniture, Appliances and Furnishings Industries, Retail

63	Automotive Vehicles, Parts and Accessories, Sales and Service
64	General Retail Merchandising Industries
65	Other Retail Store Industries
69	Non-store Retail Industries
70	Deposit-accepting Intermediary Industries
71	Consumer and Business Financing Intermediary Industries
72	Investment Intermediary Industries
73	Insurance Industries
74	Other Financial Intermediary Industries
75	Real Estate Operating Industries (except Developers)
76	Insurance and Real Estate Agent Industries
77	Business Service Industries
81	Federal Government Service Industries
82	Provincial and Territorial Government Service Industries
83	Local Government Service Industries
84	International and Extra-territorial Government Service Industries
85	Educational Service Industries
86	Health and Social Service Industries
91	Accommodation Service Industries
92	Food and Beverage Industries
96	Amusement and Recreational Service Industries
97	Personal and Household Service Industries
98	Membership Organization Industries
99	Other Service Industries



Appendix 6 Two-digit 1987 U.S. Standard Industrial Classification (SIC) Codes

01	Agricultural Production Crops
02	Agricultural Production Livestock
07	Agricultural Services
08	Forestry
09	Fishing, Hunting and Trapping
10	Metal Mining
12	Coal Mining
13	Oil and Gas Extraction
14	Non-metallic Minerals, except Fuels
15	General Building Contractors
16	Heavy Construction, except Building
17	Special Trade Contractors
20	Food and Kindred Products
21	Tobacco Products
22	Textile Mill Products
23	Apparel and Other Textile Products
24	Lumber and Wood Products
25	Furniture and Fixtures
26	Paper and Allied Products
27	Printing and Publishing
28	Chemicals and Allied Products
29	Petroleum and Coal Products
30	Rubber and Miscellaneous Plastics Products
31	Leather and Leather Products
32	Stone, Clay, and Glass Products
33	Primary Metal Industries
34	Fabricated Metal Products
35	Industrial Machinery and Equipment
36	Electronic and Other Electric Equipment
37	Transportation Equipment
38	Instruments and Related Products
39	Miscellaneous Manufacturing Industries
40	Railroad Transportation
41	Local and Interurban Passenger Transit
42	Trucking and Warehousing
43	U.S. Postal Service
44	Water Transportation
45	Transportation by Air
46	Pipelines, except Natural Gas
47	Transportation Services
48	Communications
49	Electric, Gas, and Sanitary Services
50	Wholesale Trade Durable Goods
51	Wholesale Trade Non-durable Goods
52	Building Materials and Garden Supplies
53	General Merchandise Stores
54	Food Stores
55	Automotive Dealers and Service Stations
56	Apparel and Accessory Stores
57	Furniture and Home Furnishings Stores
58	Eating and Drinking Places
59	Miscellaneous Retail
60	Depository Institutions

61	Non-depository Institutions
62	Security and Commodity Brokers
63	Insurance Carriers
64	Insurance Agents, Brokers, and Service
65	Real Estate
67	Holding and Other Investment Offices
70	Hotels and Other Lodging Places
72	Personal Services
73	Business Services
75	Auto Repair, Services and Parking
76	Miscellaneous Repair Services
78	Motion Pictures
79	Amusement and Recreation Services
80	Health Services
81	Legal Services
82	Educational Services
83	Social Services
84	Museums, Botanical, Zoological Gardens
86	Membership Organizations
87	Engineering and Management Services
88	Private Households
89	Services, n.e.c.
91	Executive, Legislative and General
92	Justice, Public Order and Safety
93	Finance, Taxation and Monetary Policy
94	Administration of Human Resources
95	Environmental Quality and Housing
96	Administration of Economic Programs
97	National Security and International Affairs

Appendix 7 – Examples of How to Estimate Releases

Examples of how to estimate releases of substances with alternate reporting thresholds are explained fully in the companion document, *Supplementary Guide for Reporting to the National Pollutant Release Inventory – Alternate Thresholds – 2000.*

Direct Measurement (Code M)

This estimate method is based on measured concentrations of the substance in a waste stream and the volume/flow rate of that stream.

Example

An electroplating facility discharges its wastewater to a nearby body of water. The electroplater is required to monitor this discharge once a month for various parameters, including release of total chromium. What is the annual release of total chromium to the wastewater by this electroplater?

Step 1

Gather wastewater flow and concentration data from the monitoring results done in compliance with the municipal by-law for wastewater discharges. Analytical results for total chromium for the year are presented in the table below.

Step 2

Calculate the mass loading for those days on which a chromium analysis was performed. This is done by multiplying the daily flow by the measured chromium concentration.

Concentration of Chromium in Wastewater

DAY	WASTEWATER FLOW (10^6 L/d)	X	CHROMIUM CONCENTRATION (µg/L)	=	RELEASES (kg/d)
Jan. 8	1.57		918		1.44
Feb. 12	1.49		700		1.04
Mar. 10	1.58		815		1.28
Apr. 15	1.66		683		1.13
May 9	1.38		787		1.09
June 13	1.29		840		1.08
July 11	1.73		865		1.50
Aug. 10	1.60		643		1.03
Sept. 8	1.75		958		1.68
Oct. 12	1.56		681		1.06
Nov. 10	1.80		680		1.22
Dec. 8	1.63		627		1.02
Average					**1.22**

Step 3

Calculate annual releases.

Based on an average daily release of 1.22 kg over the year and 250 days of discharge during the year, the yearly total chromium discharged to water is:

1.22 kg/d x 250 d/yr = 305 kg/yr = 0.305 t/yr (or 0.31 t/yr after rounding)

Mass Balance Calculations (Code C)

A mass balance is an accounting of the quantity of a substance going in and out of an entire facility, process, or piece of equipment. Releases can then be calculated as the difference between input and output. Accumulation or depletion of the substance in the equipment should be accounted for in the calculation.

Example

In the example presented earlier, the same electroplating facility operates a vapour degreaser.

Suppose that 14 t of trichloroethylene are used as a degreasing agent. Spent solvent and sludge that accumulate on the bottom of the degreaser are collected in drums for shipment to an off-site solvent reclaimer. Thirteen drums of solvent were sent to the reclaimer during the past year.

A known volume of representative sample taken from the drums is weighed, allowed to evaporate, and reweighed. From this, it is determined that the density of the sludge is 1.03 kg/L and that the trichloroethylene concentration in the sludge shipped to the reclaimer is 30%.

Step 1

The entire 14 t of solvent is released from the facility either as an air emission or as a transfer in the sludge. If the quantity of spent solvent shipped to the reclaimer is known, then the quantity transferred can be calculated based on the volume of sludge and the density of the sludge as shown below:

Volume of trichloroethylene to reclaimer
= 13 drums x 210 L/drum = 2730 L

Mass of trichloroethylene to reclaimer:
= volume of sludge x density of sludge x % trichloroethylene in sludge
= 2730 L x 1.03 kg/L x 0.30
= 844 kg
= 0.84 tonnes

Step 2

The quantity of trichloroethylene emitted to air can then be calculated by mass balance by subtracting the quantity shipped in sludge to the reclaimer from the quantity purchased:

14 t (purchased) – 0.84 t (to reclaimer) = 13.16 t (or 13 t after rounding)

Emission Factor (Code E)

An emission factor is based on average measured emissions from several similar processes. Emission factors usually express releases as a ratio of quantity released to process or equipment throughput.

Example

Suppose the electroplater previously mentioned has no information about the spent solvent and sludge accumulating on the bottom of the degreaser.

Step 1

In this case, the emission factor is found in a U.S. Environmental Protection Agency Publication entitled "Toxic Air Pollutant Emission Factors – A Compilation for Selected Air Toxic Compounds and Sources" (Bibliography no. 77). For an open-top vapour degreaser without emission control equipment using trichloroethylene (TCE), the emission factor is given as 0.93 t/t TCE used.

Step 2

Calculate the annual releases to air from the vapour degreaser as follows:

14 tonnes x 0.93 tonne/tonne = 13 tonnes (after rounding)
(TCE used x emission factor (TCE released/tonne used) = TCE released)

When emission control devices are used, atmospheric releases are estimated by multiplying the "uncontrolled" emission by the quantity (1 – C/100), where C is the control device efficiency.

Engineering Calculations (Code O)

This estimate method is based on physical/chemical properties (e.g., vapour pressure) of the substance and mathematical relationships (e.g., ideal gas law).

Example

In this example, rinse water from a copper-plating unit is treated separately from other process wastewater. Sodium hydroxide is added to precipitate the copper (Cu) in the wastewater. The precipitate formed from this reaction is removed as sludge from the facility's central clarification unit. Purchasing and inventory records indicate that 0.9 t of sodium hydroxide were used for precipitating copper last year. The quantity of copper precipitated represents the quantity of copper released from this source as solid waste.

Step 1

For each mole of copper (Cu) present in the rinse water, two moles of sodium hydroxide (NaOH) must be added to precipitate the copper according to the following reaction:

$$Cu^{++} + 2(NaOH) \rightarrow Cu(OH)_2 + 2Na^{+}$$

Scientific literature indicates that this reaction would be complete at a pH of 7.7. Sodium hydroxide is added until a pH of 8 is maintained in the reaction mixture to ensure complete precipitation. It is also known that:

Molecular Weight of Cu = 63.5 tonnes/tonne-mole
Molecular Weight of NaOH = 40 tonnes/tonne-mole

Step 2
Calculate the quantity of copper released in the wastewater treatment sludge, as follows:

- 2 NaOH react with 1 Cu
- 2 tonne-moles NaOH = 1 tonne-mole Cu
- $\frac{40 \text{ tonnes NaOH}}{\text{tonne-mole NaOH}} \times 2 \text{ tonne-moles NaOH} = 1 \text{ tonne-mole Cu} \times \frac{63.5 \text{ tonnes Cu}}{\text{tonne-mole Cu}}$
- 80 tonnes NaOH = 63.5 tonnes Cu
- $\frac{80 \text{ tonnes NaOH}}{0.9 \text{ tonne NaOH}} = \frac{63.5 \text{ tonnes Cu}}{A}$
- $A = \frac{0.9 \times 63.5 \text{ tonnes Cu}}{80}$
- A = .71 tonne Cu

The estimation method is valid only if the NaOH reacts only with the Cu present in the wastewater.